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RABIES CANINA.

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THE editorial observations which appeared in the October number of the *Veterinary Journal*, in reference to the continual prevalence of Rabies Canina, are exceedingly important, and I trust will result in inducing every member of our profession to pay closer attention to this dreadful disease.

As the editor very properly states, in too many instances the origin of local outbreaks is involved in great mystery; and even when an outbreak does occur, as stated in the February number of the *Journal*, and from the bite of an apparently healthy dog, the mystery still requires further elucidation.

Every *fact* relating to this disease is of importance, and however trifling the circumstances may appear in the history of an outbreak, they should be recorded, as they may tend, either now or at some future time, to lead us to just conclusions.

Some years ago, there was an outbreak of Rabies among the hounds belonging to the Cheshire Hunt. My father was called in attendance, and some of the dogs were sent to his establish-

ment for treatment. I believe a record was made by him with reference to the cause of this outbreak, but I have not been able to find it; although I have discovered notes of two cases of Rabies in horses, which I append.

Last year I was consulted about a young dog suffering from "Distemper" in a very severe form, and which rapidly passed into the epileptic stage. During his fits, which were almost constant, there was a discharge of saliva from the mouth, and the animal was frequently biting at the ground and at himself. These symptoms subsiding, he appeared regaining strength; but he soon relapsed into his former condition, and in his fits was continually biting the end of his tail. I cut away the bitten portion, and applied the actual cautery.* After unloading the stomach, which contained blood, hairs, dirt, and other matters, I gave him sulphate of quinine daily, with nutritious food. The dog recovered from this stage, but exhibited a very morose temper, and would frequently stray away. Subsequently he became affected with Chorea, but not to a violent degree, and it did not affect the use of his limbs. His temper did not, however, improve; and he often would slink away into a corner and refuse to come out. One night he either was stolen (for he was a valuable animal), or—which I believe was the real state of affairs—he strayed away, and was destroyed by reason of his suspicious appearance. Can either the editor of the *Veterinary Journal*, or any other veterinary surgeon, inform me what is the effect of the saliva of the dog suffering from "Distemper in its malignant form on a wound? Is it under certain conditions a poison, and will it exert, under certain circumstances, a malignant influence, and produce Rabies?

One swallow does not make a summer; and one case is not sufficient to establish the theory of its being produced from the bite of a healthy dog, or of the establishment of the disease by virus communicated by an animal labouring under a particular form of "Distemper."

A short time since a stray dog was brought to the Agricultural College Hospital. He was wild, savage, and continually biting at his fore-feet. He was secured, and a purge was given him;

* The operation was successful, for he ceased to bite his tail.

the next day he appeared more cheerful, partook of a portion of his food, and drank some water. He had, however, a wild, suspicious look about his eyes, and was easily excited on the approach of any one. The following morning he broke his chain; and on the door of the apartment being opened, he made his escape, and was not afterwards traced.

In the editorial remarks on the outbreak at Harlow, after detailing the particulars relating thereto, the question is asked, "But how did the young bitch become affected?" It appears she had had the "Distemper," and also an attack of Jaundice. I think the previous history of this bitch should, if possible, be ascertained. It would seem as if there was some remote influence at work, or why should this bitch have become very quarrelsome?

Did she receive any bite from any other animal, healthy or unhealthy? Or was her mania produced from other causes? Or are we to accept the theory of Mr. Johnstone,* that Hydrophobia is the result of the animal being inoculated by *biting* some persons suffering from the disease of intoxication.

It is my belief that the study of animal poisons generally, and their effects, is one urgently called for, both for the important interests of life and property, as well as in a humane and sanitary point of view; and it is our duty to take a leading part in this investigation.

NOTES ON RABIES CANINA IN HORSES.

In the "Surgeons' Vade-Mecum," printed for John Murray, Fleet Street, 1809, the author, describing "poisoned wounds occurring from the bites of *rabid animals*," says: "After the expiration of a shorter or longer time, sometimes not until many months after the accident, the part becomes painful—wandering pains are felt over the body—great restlessness, heaviness, disturbed sleep and frightful dreams, sudden startings of spasms,

* Given in the *Farmer* of September 25th, 1876.

sighing, anxiety, and love for solitude." To this was added, on a blank page, the following notes by my father:—

"In one case I saw, the horse had been bitten four months before; he was attacked one Wednesday, appearing heavy and drooping, but his appetite was tolerable. The next day a shivering fit came on, which induced them to take four quarts of blood from him. On the following day he appeared remarkably restless, ranging from one side of the stall to the other, rubbing his nose and head first on the wall, then on the rack and manger, sometimes biting them. His appetite was indifferent. He kept continually pawing with one fore-leg, looked vicious in his eyes, and inclined to kick at any one approaching him; he was very timorous, and all on the alert when any one was near him. If they approached his head, he dashed at them with open mouth. When water was offered him, he occasionally would take three or four mouthfuls, and I could observe now and then a convulsive spasm ensue after swallowing it. Often he would only dip his nose in it and immediately withdraw again, as if afraid to attempt to swallow any. The next day he was raging mad, and shot.

"Another which I saw laboured under similar symptoms, but was occasionally delirious, like a horse having the sleepy Staggers. It died raging mad two days after.

"This horse travelled five miles to our house; and my father, not knowing the history of the case, suspecting it was incipient Staggers, inadvertently administered balls to it with a large ulcer upon his hand. On going over to it the day but one after, I found it down, raging mad and quite exhausted. It died during my stay.

"On coming home, I informed my father it had been bitten by a mad dog. My father immediately shaved off a piece of flesh from the surface of the ulcer, and no bad consequences followed.

"In another case, the horse was bitten about the legs, being brought over immediately after the occurrence. I cut the parts out, and applied lunar caustic to as many as I could find. The animal continued well until twelve months afterwards, when it became raging mad and died.

"Little can be done in this direful malady; the morbid effects

show the mucous membranes of the pharynx, stomach, and intestines highly inflamed, great determination of blood to the brain, etc."

REPORT ON "*ANTHRAX FEBRIS EPIZOÖTICUS EQUI.*"

(*Condensed from the original.*)

BY R. POYSER, M.R.C.V.S., "THE CARABINEERS," YORK.

IN one or more of our Indian Presidencies, the above malady breaks out, without premonition, almost annually—leaving a lasting impression wherever its ravages have been in virulent operation. Last year the horses of the 1st Madras Cavalry and other corps at Bowenpillay, a suburb of Secunderabad, in Madras, were attacked (*Times* of India). Bengal and Upper India have had their share; and as it may be this disease that has been recently creating such terrific mortality amongst the horses in Egypt, we select this as an opportune moment to reproduce, in a condensed form, the opinions arrived at by a Board * assembled under the presidentship of Principal Veterinary Surgeon R. J. G. Hurford, to inquire into the history, nature, causes, etc., of a disease which prevailed in Umballah and other stations between the 6th September, 1870, and the end of March, 1871.

Known amongst Europeans in India as "Loodianah disease," and having the Hindustani synonyms of "Bhogonah" in horses and "Goli" in cattle, it is a malignant anthracoid Fever of a low typhoid type, autogenetic amongst horses, horned cattle and sheep, met with in other countries and in various forms, communicable to and becoming in man Malignant Pustule.

History.—It has existed in India from time immemorial. The first time it excited much attention was about 1841-2, when it prevailed amongst R.H.A. horses at Loodianah, causing great mortality. Owing to the severity and fatality of its attack, it

* The members of the Board were Staff Veterinary Surgeon G. H. B. Hallen, Bombay Army, and First-class Veterinary Surgeon H. Sewell, 4th Hussars.

there and then obtained, and has since retained, the name of "Loodianah disease."

It occurred in the

YEAR.	CORPS.	PLACE.	REMARKS.
1845	10th B.C.	Nowgong.	Sporadic.
1850	5th B.C.	Nakodah.	
1852	10th B.C.	Peshawur.	
1853	Amongst the "Jaun."	Euzoofzie.	
1854	5th B.C.	Ferozepore.	
1856	10th B.C.	Ferozepore.	
1856	5th B.C.	Peshawur.	
1858	5th B.C.	Meerut.	
1860	12th B.C.	Between Delhi and Bareilly, on north bank of Ganges.	
1861	5th B.C.	Muttra.	
1864	20th Hussars and in private horses.	Sealkote.	
1864	18th Hussars.		Severe.
1865-70	20th Hussars.	Campbellpore.	Sporadic.
1866	Royal Artillery.	Dinapore.	
1867	7th Hussars.	Sealkote.	Spring, 4 horses died.
1867	7th Hussars.	Sealkote.	Autumn, 19 horses died.

When the British army landed at Zulu, Abyssinia, a severe type prevailed amongst the horses and mules of the force, and carried off great numbers in 1867 and 1868. At Bangalore, in March 1868, a virulent form showed itself in the 16th Lancers and Royal Artillery. Cases were met with in 1869 in the 20th Hussars at Campbellpore, and in the 21st Hussars at Umballah. In 1870 there was a virulent outbreak in Umballah in the R.H.A. and 20th Hussar horses. It was epizöotic, and very many died. It abated twice, and reappeared a third time, and extended over a period of about six months. It 1871 it appeared in Sealkote and Peshawur in troop and private horses. Many of the Punjaub postal horses are supposed to have died from the disease; and in Umballah, when the troopers were healthy, it attacked private animals. In the same station the 12th B.C. were mildly affected, few died, and it soon subsided.

Ætiography.—This particular outbreak was due to the following causes, two or more co-existing and co-operating:—Faulty

stable buildings; crowding of stables; crowding of horses in stables with insufficient cubic space; want of proper drainage; collections of urine and dung of years under the stalls, and of manure in the neighbourhood of the stables; impure water; infection; non-nutritious grass; exposures to extremes of temperatures; and in some cases, previous poverty followed by rapid improvement.

Ætiological observations.—The disease was generated, and appeared first, in the centre and most confined portion of the middle range of a block of new stables, which, prior to the arrival of F.C., R.H.A., had not been occupied, and, almost up to the 3rd or 4th of September, 1870, had remained untenanted during the nights, the horses being picketed outside on "terraces" running parallel to and within a few paces of the buildings. Heavy rains now rendered shelter indispensable both night and day. After the second night's occupation, the affection broke out virulently amongst the horses of the above battery. They had for many months previously been suffering from Enteritic Fever at Benares, and since their sojourn in Umballah had not progressed towards health or condition, because they had not received properly clean and nutritious grass forage. These three parallel ranges, accommodating sixty, sixty-four, and sixty horses respectively, were built very close to each other, as being most convenient to the harness-room and workshops, and because the "terraces" were sheltered from winds and sun by an avenue of trees on each side. The adoption of this arrangement was proposed by a colonel of the Royal Artillery in direct opposition to hygienic principles; "For," wrote the executive engineer, "except on sanitary grounds, I consider the distribution of the building sites (proposed) good." [*Except on sanitary grounds! Truly this is but one instance of a total disregard of experience and prediction thereon—a sacrifice of health, life, and money to convenience and transient comfort.*]

In a second but old lot of stables, which were not built so closely to each other as the new ones, the horses of another battery—E.F., R.H.A.—were more crowded than they should be in a climate so peculiarly "muggy" and oppressive at certain seasons. These ranges ran in a line with the prevailing wind; and

as both ends were closed by store rooms or dead walls, the breeze could not effect due ventilation. The floors, when disturbed, disclosed a collection of filth of two years' standing, two or three inches deep, and of black sewage, foul, stinking, and slimy.

After the outbreak in the 20th Hussars, at the same time and place, the floors were dug up for reconstruction, and earthen vessels were found two or three feet beneath the surface of the stalls, containing urine and filth, probably of years' accumulation, which had percolated through some of the cisterns, saturating the earth about three feet around with a most offensive black putridity. Where the disease had been most virulent, there the ordure-pots were most numerous and the ordure most abundant. These receptacles are believed to have been under the stalls in 1869, when cases, thus accounted for now, had occurred in the 21st Hussars. The stables in which officers' horses had been attacked and died were all devoid of ventilation, and some were foul from want of drainage.

The horses of E.F. were in fair condition when they marched in from Peshawur in 1868, but afterwards lost flesh from feeding on unwholesome grass and water, and suffered from diseases of the digestive organs, thereby becoming predisposed to Anthrax. When inspecting the 20th Hussars' stables, the Board found stacks of very inferior grass (immaturely cut, too much or insufficiently dried, additions made daily to the stock, the whole containing an excess of roots and earth), and heaps of bedding made up of green grass originally intended for food, but rejected by the horses; and these heaps contained their droppings. Grass forage has not only decreased but deteriorated lately. Anthrax Fever having been frequently met with of late years, may be attributed to the fact that Government horses are more generally stabled than was the case formally.

The water supply was more or less impure, owing to its defective conveyance to the horse troughs.

Dr. Macnamara (Government chemical examiner) states that no very satisfactory examination could be made, as many of the samples of water were in a putrescent state when examined. Most of them were of a very foul kind, containing very much organic matter. Fourteen specimens were taken from the sup-

plying wells, reservoirs, syphons and aqueducts; and, he continues, Nos. 1, 6 and 8 contain but a small quantity of chlorine—not more than is usually present in tank water; and it may therefore be considered questionable, notwithstanding the large quantity of organic matter present, whether the water suffers from sewage contamination. In the evidence it is shown as most probable that infection was in operation. Teams, and horses always stabled closely together, and worked and even exercised together, were more attacked than detachment horses which were not so intimately connected. A battery bullock employed in removing the remains of horses dying from Anthrax died of the same disease. A veterinary surgeon in charge dissented from the infective view held by the Board, but was commended for enforcing the strictest measures to prevent extension by infection. The Board thought that although perhaps not, in certain forms and seasons, infectious, it should be met, especially in India, with very careful quarantine, no preventive measures being neglected. In Asia and Africa altitude exerts a marked influence in checking the progress of the malady. On the eastern coast of Africa it is not met with four thousand feet above the sea. It is an important fact that it is most liable to occur on low lands in a line forty or fifty miles from the Himalayas; and probably this is the case on the low lands along the entire eastern coast of Africa. Such being the case, it becomes requisite that extraordinary care of horses so circumstanced should be observed by those in charge, and prophylactic measures strictly carried out. Experience shows that the incubatory period is probably limited to ten or twelve days. The experience gained when the disease attacked the horses and mules of the Abyssinian Field Force, led to the above conclusion being arrived at; whilst ten observations made during the late outbreak are confirmatory of the above opinion. The disease first showed itself in F.C., R.H.A., on 6th September, 1870. In E.F., R.H.A., there were no less than three outbreaks. The first case of outbreak No. 1, and the first death, occurred on the 19th September. The last case was admitted on 8th November, and the last death happened on 22nd October, 1870. Eighteen horses died. On 19th September the battery vacated the stables.

From 22nd October to 19th December (on which latter date the first case and death of outbreak No. 2 happened), the horses appeared perfectly healthy, no sickness of any consequence prevailing. Weather previously cloudy and oppressive. Three more deaths were recorded by the 22nd December, when rain fell, after which the same oppressive weather again prevailed; and no more cases were admitted till the 1st January, 1871, on which date four horses died. On 2nd January the battery moved into camp, a mile and a half away, leaving nine sick cases in cantonments. Of these six died; whilst in the various camps five more died—making the second total nineteen. The last case was admitted in camp on 25th January, and the last death there occurred on 26th January. The battery returned to cantonments on 6th February, and picketed on the parade ground, remaining there unmolested, epizöotically, till 15th February, when it re-occupied the stables. Four nights after this, on 19th February, outbreak No. 3 commenced, two horses dying in a few minutes. Next day the horses were again picketed on the parade. The same oppressive weather prevailed previous to this as before the second attack, and especially on the night when the two horses died. Seven more died, and the battery marched into Camp Sahor on 23rd February, thence to Moobarickpore on 25th. Six out of seven more admissions died—making the third total sixteen: Last case admitted on 21st March; last died on 5th March. Grand total, fifty-three: Australians, twenty-five; stud—country-breds, twenty-eight. Nineteen of the former horses were between five and ten, and six between ten and fifteen years old. Seventeen of the latter were between five and ten, and eleven between ten and fifteen.

Strength of battery, 151. Deaths, fifty-three; recoveries, forty-three.

Strength of F.C., R.H.A., 171. Deaths, sixteen; recoveries, twelve.

Strength of 20th Hussars, 460. Eight died; eighty-five recovered.

The Board expressed an opinion that if the horses had been kept away from the station, the disease would not have affected them; and that when removed from an infected locality, they

should not, merely on the cessation of Malignant Fever, speedily return to their stables, though they may have been purified, but should be kept away for as long a time as may be considered requisite to establish a thorough change in their systems.

In his evidence, the medical officer of E.F. stated that at the time Fever broke out amongst the horses, he had cases of low fever of a typhoid character amongst the men, and that this fever, though never rising to an epidemy, did not cease till the men, with the horses, were removed into camp.

Semeiography.—Fever is always present. Occasionally a prerigour is observed, but it oftener escapes notice—Anthrax being, at times, most insidious in its attack. In mild cases the patient is dull; off feed; coat stares; eyelids close; visible mucous membranes inject; mouth hot and dry; cough may be present; slight swelling in vicinity of parotid glands, throat, trachea and chest; pulse full, and beating from 55 to 65; respiration accelerated; sore throat and difficult deglutition; yellow nasal discharge at times, mixed with the gruel, etc., the animal has attempted to swallow; breath becomes offensive.

In other cases the swellings rapidly increase, involving the whole of the head and closing the eyes and nostrils; tongue, larynx and pharynx being similarly implicated, threatening the patient with immediate asphyxia.

Sometimes the symptoms indicate that the aerial passages are chiefly involved; petechiæ and erosions are seen on the Schneiderian membrane; conjunctivæ are injected and ecchymosed; throat sore; cough follows the effort to swallow; copious mucoid discharge, mingled with substances to be ingested, often issue from the nostrils. The cough is of that character denoting pneumonic complications, and auscultation indicates that portions of the lungs are already impermeable. In such a case the patient persists in standing, reels from exhaustion if he attempts to move, and at length falls and dies from suffocation. Pulse, at first quick, soon becomes oppressed, and finally so feeble as to be scarcely perceptible; if countable, will reach 100 per minute, being irregular and intermittent—pulsations varying in volume, indicative of cardiac complicity and blood disorder; visible mucous membranes now assume a dark hue, and the petechiated

condition first seen is more or less lost in the general violet tinge of the membrane.

Again, the disease presents itself under other aspects; and the chief symptom which attracts attention is restlessness from abdominal pain. The head is frequently turned to either flank; he paws the ground, attempts to strike his belly, lies down, and exhibits the usual signs of colic; breaks out into a cold sweat, which emits a very sickening odour. In other cases, after evincing febrile symptoms and perhaps slight throat-swelling, the patient is more or less under the influence of cerebral congestion: head pendulous, nose nearly resting on the ground, eyelids closed, breathing much laboured; coma soon sets in; pulse full, but beating slowly and feebly. After a time he will move about the stall, often striking his head against the wall; he becomes excited, falls down suddenly, rises quickly, walks about, neighs loudly, evincing unmistakable delirium, biting at all within reach, and even gnawing his own limbs. If he now falls he is unable to rise; and after several attempts to do so, sinks on his side, using his quarters and limbs violently, as in the act of galloping; now and then he neighs deliriously; exhaustion speedily ensues, and he dies.

The comatose period may be suddenly interrupted by the horse falling down as if shot, or by a sudden spasmodic effort throwing himself into the air, and falling to rise no more.

In the generality of cases the bowels are but slightly affected; at times they are constipated, at others relaxed. When enteritic symptoms predominate, defecation is difficult, the pellets are hard and coated with mucus. After passing a few he will strain violently, ejecting a small quantity of watery mucus. The urine is generally found to be dark-yellow, viscid, albuminous, and occasionally blood-tinged.

If blood be extracted in the first stage of the malady, it is of a reddish hue, but rapidly acquires a darker shade, and in the latter stages is dark and grumous. The temperature in the rectum runs from 104° to 111° F., and in the mouth from 98° to 103° F.

The above symptoms will be better understood by a reference to the pathology of the affection, to be shortly noticed.

Post-mortem appearances, generalized from the evidence of Veterinary Surgeon W. Boyd, R.H.A.:—

Membrane lining nasal cavities and facial sinuses congested, and of a dull leaden hue; subcellular infiltration in some cases; in many the nostrils were filled with frothy mucus; mouth generally of a dull colour, and full of aphrotic mucus, emitting a very offensive and sickening odour; membrane of pharynx and larynx congested, subcellularly infiltrated, often completely occluding the laryngeal and œsophageal passages—this condition generally extending down the trachea and into the bronchial ramifications; membrane easily removed from mouth and throat, when the latter locality is severely implicated. Œsophagus rarely much affected. Lungs in almost every instance congested; in some black as tar, and when cut, blood runs out in an inky stream. Pleura, as a rule, normal.

Heart rather flabby, its ventricles containing dark fluid blood. All cellular tissues in its vicinity infiltrated with yellow serum.

Pericardium generally contains a large amount of effusion—in some cases nearly filled; endocardium occasionally ecchymosed.

Gastric mucous membrane congested in some, a condition scarcely traceable in other instances; in several, ulceration, and its mucous membrane easily detached; ecchymosis was noticed. Intestines invariably healthy, and their contents of natural consistency.

Mucous membrane of duodenum very much congested in a few cases; in others there were congestive spots on colon, and same condition, as well as thickening, of Peyer's patches. Liver and spleen nearly always engorged, occasionally lumpy and rough, and when incised, tarry-looking blood ran out.

Mesentery greatly infiltrated with yellow serum, a large quantity of which fluid is found in the abdominal cavity.

Kidneys blanched in some, but much congested in others; and much viscid serosity in pelves.

Mucous membrane of bladder often congested; urine of a treacly consistency, sometimes of a port-wine colour, thick and gelatinous. The urine has been noticed to be red like blood. Its specific gravity was found to be higher than normal. When left at rest, there was seldom any deposit, and the colour remained.

Colour is due to disintegrated blood-corpuscules or the colouring matter of the blood. Heat or acid demonstrates the presence of albumen; the precipitate was gelatinous, and of a brown or fawn colour. Pettenkoffer's test afforded no evidence of the presence of bile.

Brain congested, showing yellow serum deposits; also found, in numerous instances, in the theca vertebralis.

Throughout the connective-tissues of most of the horses, yellow gelatinous or serous effusion was found, but generally more abundant where the attack had been of some duration. In patients that died after two or three hours' illness, scarcely a trace of effusion was noticeable. After death, putrescence of the textures rapidly sets in.

We now particularize the necroscopic appearances observed by the Board, in the body of a pony that had been ill three days, and in which the symptoms, twenty-four hours before death, showed the aerial passages and lungs to be chiefly involved. No subcutaneous exudation; mucous membranes deeply injected; on Schneiderian membrane were several petechiæ and one or two erosions. Conjunctivæ violet-coloured, and slightly ecchymosed in patches. Petechiæ on mucous membrane of gums and lips. Mucous nasal discharge most offensive. Velum palati and pharynx deeply congested, and much thickened with submucous exudation of a yellow gelatinous matter. Pyloric portion of stomach congested, with two or three patches of deeper congestion. Small intestines showed here and there a congested mucous membrane, and many dark spots and patches of submucous exudation. Peyer's patches in the ileum of a bright-red colour, raised at one or two points, and slightly ulcerated. Large intestines also much congested in their mucous membrane, especially one portion of colon. Purple and black spots of ecchymosis were seen on the peritoneal surface of all the intestines. Liver but slightly congested, still very friable under pressure. Spleen normal; kidneys much congested, and easily torn; their pelvic lining deeply congested, and much thickened with yellow submucous exudation; and purulent matter, mixed with the usual viscid mucus, was found in each pelvis.

On the peritoneal layer under the lumbar region, covering the

left kidney, was a large patch of ecchymosis, and there were similar smaller patches on the various parts of the parietal peritoneum. There was no unusual amount of secretion within the abdomen.

Laryngeal mucous membrane much congested, epiglottis mottled, its borders tumid. Tracheal mucous membrane of a dark coffee-colour, with inky stripes. The amount of submucous exudation throughout the whole extent was so great that, on making a transverse section of the trachea, the exuded material was one-sixteenth part of an inch thick, and of a yellowish-green colour; bronchiæ in a similar state. Pleural aspect of lungs mottled with ecchymotic dots and patches, universally congested. Lungs contained dark liquid blood—very few portions remaining light and pervious. Greater part of both sphacelated. When cut into, a dark liquid, holding semi-congested blood-clots and pus, ran out, and emitted a most sickening and offensive odour.

External surface of pericardium ecchymosed in patches, especially at its base; and a similar condition was found on the surface of the heart, and inside its right ventricle. In both cavities were semi-congealed blood-clots, consisting of a yellowish-green and tarry portion. The bicuspid and tricuspid valves were much infiltrated, and thickened with yellow interserous exudation.

[*There appears to have been no examination of the brain and spinal cord in this case.*]

A very interesting account of this or a similar disease, which broke out in the 16th Lancers at Bangalore, in Madras, on the 2nd of March, 1868, is given in the *Veterinarian*, soon after that period, by the late Veterinary Surgeon Richardson. Another report, from the pen of Nicola Chicoli, on the Typhus Carbon which prevailed amongst the horses of the Lancers stationed at Palermo in October, 1867, is given verbatim. The disease, which is of a highly contagious character, of an acute type, and most fatal in its results, threatened the destruction of all the horses which were collected together in the stables used by the Cavalry. On the 5th of October the detachment arrived; on the morning of the 10th two horses died, after a few hours' illness; and in the afternoon two more died. In the night from the 10th to the 11th four more died, and one in the morning. The cry was that

the horses were poisoned—not only, the author regrets, by the vulgar, but even amongst those in high authority—and there was such a panic that the ingesta and fæces of the dead animals were collected and sent to the hospital to be analysed. The horses were meanwhile removed a short distance into the country, where on the 13th three more died, and three others on the 14th. On the 13th, a mixed commission was appointed by the authorities, consisting of two officers, the surgeon and veterinary surgeon of the regiment, with the hospital chemist. The commission met the same day where the horses had been removed to, and where the remains of the last three, and some other animals which had been attacked by the malady, still were. The investigation commenced by an examination of the latter: they all presented the diagnostic characters of Entero-carbon Typhus. The blood also, on being examined, had the well-known character of carbon. Curative and prophylactic measures were adopted; and two of the three remaining horses recovered completely, and in course of time performed their usual service.

Owing to the serious nature of this outbreak, and from the experience gained by three similar attacks which happened in 1854, 1857, and 1859 in Palermo, every precaution was taken by the veterinary surgeon of the regiment to prevent the malady attacking the other horses, in which case the losses would, doubtless, have been very severe. In November the regiment was removed to the Continent, leaving a detachment at Palermo. The author was charged with the veterinary medical care of the detachment which were lodged in the Victoria Barracks, about one kilometre from the Tower. Here 130 horses were placed in a double stable, which, though principally exposed to the north, had all the hygienic requirements—viz., high ceilings, ample space, windows to the north and south, proper pavement, etc. Everything seemed to indicate a perfect state of health amongst the horses; when, on the 28th of December, in the morning, one of the horses of the 6th squadron died, after a few hours' illness. The symptoms and *post-mortem* examination showed unmistakably the character of the Entero-typhus form of Carbon. A report having been made, orders were given for the horses to be quartered out in the neighbouring villages, so as to remove them

from the focus of the contagion; at the same time hydrochloric acid was ordered to be put into the drinking-water. But before they could be removed, another horse of the same squadron became affected, and died in a few hours. The order finally was, not for all the horses to be removed, as had been recommended by the author, but only for three troops of the 6th squadron to be taken away. On the 2nd of January, 1868, a mare became affected, and died: the order was now to remove all the horses; and on the 3rd they were all sent away, and the stables left for disinfection. Experience from the various attacks of the same epizöotic had shown the advantage of a change of air, and the removing of the horses from the morbid influence, while means were adopted to combat the disease. In 1854 the results were manifest, for while about fifty horses had fallen a sacrifice, they had hardly been removed from the locality when the mortality ceased. The same was the case in 1857, when the disease prevailed amongst the horses and mules of the mountain battery: it was suddenly arrested by changing the locality. In the present outbreak the result was precisely the same. The epizöotic was, however, not limited to the horses of the cavalry: it spread to those of the town, amongst which it progressed, so that more than thirty cases occurred between the 2nd of January and the date of the author's report—all terminating fatally. In the pasture of Monte Pelligrino fifteen deaths happened amongst 150 horses.

Symptoms.—These do not present different stages, on account of the short duration of the malady. The first sign is loss of appetite; oppression and coma; extremities and surface become cold; respiration accelerated; pulse small, intermittent, and increased to about 56; mucous membranes infiltrated, and of a dirty-white or yellow colour; the alvine evacuations are normal; urine scanty. On placing the hand on the left flank, an unusual movement is perceived, as if the peristaltic motions were quickened. As the disease progresses, coma increases; extremities become icy cold; pulse is imperceptible; paleness and dryness of mucous membrane more marked; respiration more accelerated, and entirely thoracic. Movement of intestines is now convulsive, and on placing the hand on the right hypochondriac,

the hepatic circulation can be distinctly felt, different from the rhythm of the heart. Patient evinces colicky pains, attempts to lie down, looking sometimes at the right and sometimes at the left flank. Urine is now completely suppressed, respiration suffocative, pulse indistinct; the icy coldness of the body, the convulsive movements, the increasing spasmodic contractions, the continual getting up and lying down, the increasing debility, are the precursors of speedy death. The blood drawn from the vein at different stages presents the following characters :—

1. At the invasion it flows freely, but at a later period with great difficulty, depending on a gradual loss of serum. 2. The colour at the commencement is of a reddish-violet, which becomes more marked as the disease progresses, and in proportion to the quantity of serum it contains and the increase of carbonic acid. 3. Treacly consistency increases with progress of malady. 4. Exposed to the air at divers hours of the progress of the malady, it was found during the first period to be of a vermilion-red colour, showing that it was still capable of oxidation. This, however, gradually diminishes, and is completely lost sight of at the near approach of death. The opening and shutting of the mouth, which is a characteristic symptom in animals struck with this epizöotic, appears to be an effort to take in more oxygen than can be received through the nostrils, and seems to indicate a loss of that gas in the blood elements. 5. The blood, though not undergoing natural coagulation, nevertheless separates into serum and clot—the former of a turbid and whitish-yellow colour, and much reduced in quantity. This diminution goes on increasing as death approaches. 6. Buffy coat is absent; but soon after the invasion of the malady the surface of the clot is depressed, and on it bubbles of carbonic acid gas are found. 7. Finally, the blood soon passes into decomposition when left exposed to external influences—which tendency increases with the progress of the malady.

Necroscopia.—Mucous membranes pale yellow; eyes limpid; skin dry, subjacently adhesive; abdomen distended; *rigor mortis* less marked than after ordinary death—that is, slower and less complete. Adipose tissue much diminished; small vessels empty; only a few drops of blood in large trunks;

aponeuroses of a whitish-purple colour; muscles throughout of a dark-violet colour, flaccid and softened, showing signs of *ante-mortem* decomposition—accounting, perhaps, for absent *rigor mortis*. Instead of finding gaseous accumulation in the abdomen, as life appearances indicated, there was a quantity of yellow serum. Large intestines were infiltrated with the same. Blood-extravasated spots on peritoneum. Intestinal coats thickened with jellied serum. Cœcal surface similarly affected, though less thickened. Mesentery presented same yellow appearance, and was much injected near the mesenteric glands, which were hypertrophied externally, some being dark-purple, and others mottled: they were hard and resisting to section, and the same in colour inside. The remaining portions of abdominal viscera were similarly morbidly affected. Mouth, pharynx, and œsophagus showed no appreciable alterations, except in the mucous membranes, which were of a pale-yellowish colour; slight erosions in one of twenty-five *post-mortem* examinations. Stomach empty; surface injected, and of a dark colour, principally at pyloric division. Small intestines, when laid open, showed mucous membrane softened and of a dark-red colour, covered with darker spots and erosions, with some ulcers of follicles, which were generally obstructed. Chyme normal; a few drops of blood found in it, resulting from capillary exudation. Spleen of normal size and colour, but softened. Liver ditto; portal and hepatic veins containing little blood. Thorax contained no effusion or alteration of serous membrane. Lungs congested right or left, according to position of the carcase. On section, blood was observed to be diffused in the substance, and of a highly violet colour. Larynx and trachea contained a great quantity of bloody mucus; the mucous membrane slightly congested. Heart flaccid; ventricles empty. Brain in some cases normal; in others, ventricles contained yellow serum.

No account of treatment, etc., is here given in respect of the Umballah outbreak, for it cannot be said to have been eminently successful where the disease was at all severe. The most recommendable description of curative, suppressive, and prophylactic measures for Anthracoid affections, will be found in Fleming's "Veterinary Sanitary Science and Police," vol. ii., pp. 185-94.

ON THE PHYSIOLOGY AND PATHOLOGY OF THE STOMACH.

BY JOHN HOWARD, M.R.C.V.S., WOOLWICH.

(*Continued from page* 188.)

WE now approach the highly important subject of vomition; upon which, as a diagnostic symptom, the opinions of many eminent practitioners, *pro* and *con*, have been given. Without following, or leaning to the ideas of others, we propose to make an impartial investigation of the subject, taking science as an instructor and the results of practice as a guide.

It was the opinion of the old writers, and veterinarians generally of that period, that vomition in the horse was an impossibility; and in a recently edited edition of one of their works, we are told that the œsophagus, before entering the stomach, forms an acute angle. In an illustration we are shown the *cardiac orifice* closed by its rugæ or folds, the presence of which is adduced as an additional impediment. This has been called the *valve of Gurlt* by some, but in reality there is no valve at all present, any more than in other mammals; and it is doubtful whether the cardiac orifice is completely closed during digestion, or at any other time, except as the result of diseased formations. That there is a continual, imperceptible, tidal current of air, passing to and from the organ, between itself and the atmosphere, is highly probable; or else why have we excessive tympany of the stomach and intestines, threatening suffocation, when an animal becomes choked by the lodgment of a substance in the œsophageal tube? This may be at the upper part, or the middle portion, which can in no way interfere with the stomach (and does not compress the trachea); yet we have an inflated gaseous state of this organ and small bowels, immediately following the obstruction. The secretions of the salivary glands, no longer finding their usual exit by deglutition, *slavering* becomes also a prominent symptom. It is vain to urge that the tympany is consequent on the stoppage of the natural eructations, which accumulate and thus cause distension, for the simple

reason that in the horse, when in health, eructation is very uncommon at any time. You may stand by a horse for hours at a time, and not the slightest eructation will be seen; after which pass a piece of sponge with a string attached, or any suitable substance into the œsophagus, and in a few minutes tympany of the stomach will be witnessed. No doubt this change will be the soonest observed in animals suffering from indigestion, who eructate continually; but as such a condition is not very common, we must certainly set it aside as an adventitious circumstance.

It will be found, on careful observation, that the stomach undergoes a very slight compression and dilatation, from and to its normal calibre, synchronously with the acts of inspiration and expiration by the lungs. Small quantities of air thus find their way into the stomach, and perform a physico-chemical action with the gases and substances contained therein; but when the communication is stopped by the impaction of any substance in the œsophagus, the return currents of waste gases are denied exit, and the ordinary, imperceptible, gastric tidal air being wanting, an excessively perverted chemical action takes place, causing distension of the organ. The cardiac orifice and œsophagus acts in the double capacity of a tube for supplying materials, and an exhaust-pipe for waste and superfluous gases. When the stomach is empty, the gastro-chemical action and communication with the external air is at a minimum; and as a proof of this, should the œsophagus be then plugged, although tympany will result, a much greater time will elapse before gaseous distension becomes apparent. It appears doubtful whether the mere presence of the insalivated food with the gastric juice could, by any action they are capable of setting up, produce, unaided, the amount of gas developed in the stomach during digestion. With the continual ingress of an imperceptible tidal current of air, which, by parting with its oxygen to the hydro-carbonaceous materials then in chemical transition (by the action of the gastric juice), carbonic acid might be more readily formed, which, being carried off in company with other waste gases, prevents excessive acidity of the gastric contents. When, from diseased action, these functions are improperly performed, who in his own person

has not found the benefit of waters largely charged with carbonic acid introduced into the stomach—which immediately brings about the necessary relief by combining with the imperfectly formed gases and carrying them off in combination with itself?.

We have not far to travel in the realm of comparative anatomy, before we find animals in which there is not only a free communication between the alimentary tract and the external air, but, in addition, every fluid and tissue of the body is continually bathed with the atmosphere; therefore we consider this hypothesis, on the grounds before-mentioned, quite as tenable as any of those at present in vogue in the two professions, and on which many freely pin their faith.

The reasons which prevent vomition in the horse being as common as in many other mammals, must be looked for elsewhere than in the explanations usually given and received. When the horse does vomit, the natural and true passage for expelled materials is by the nostrils—his anatomical conformation being most suitable and convenient for that method of ejecting substances when nauseated, the *vellum pendulum palati* preventing any matters from finding their way into the mouth. On examination, it will be found that the horizontal position of the body greatly favours vomition *per nares;* the *pharynx, fauces narium,* and the *posterior nares* forming an arc of a circle; so that matters projected from the stomach must find their way out through the nostrils, by simply following the true line and culminating point of their trajectory.

This natural contiguity is best exemplified to the practical veterinarian when he wishes to pass the probang, to remove any obstacle situated in the œsophageal tube of the horse. It has lately been stated that the probang could not be passed *per nares,* and that passage by the oral entrance, *per fauces,* was the only correct and possible method. If the instrument be large, and made with a bulb-end, this will be the case; such a probang is not fit for use in the horse. A properly made equine-probang should be the exact size, shape, and dimensions of the ordinary male catheter; a bulb on the end, be it ever so small, is not admissible—indeed, the ordinary catheter has been found on most occasions, in our hands, to answer the purpose. This

instrument requires lubricating for about three inches from the distal end only, and may generally be passed *per nares*, by gentle manipulation, with great ease, by either nostril; but we generally prefer the left one. We have experienced a little difficulty in old horses, by one of the passages being partly or wholly stopped by the formation of false membranes in the *posterior nares*—the result of neglected attacks of Catarrh; but these are easily broken down by a few probing pushes of the hand; some trifling hæmorrhage ensues, which fails in drops for a short time, but no apprehension need be felt—and in these cases the animal always thrives, and performs his work much better afterwards, his full respiratory powers being restored to him; in ordinary cases, however, no obstruction is met with. In a practical point of view, the advantage of passing the instrument by the nose instead of by the mouth is great—one attendant being sufficient for the former method, whilst half a dozen will be required for the latter, and then failure may result with some animals. If done by the mouth, the horse's head must be held up and drawn forward by at least two strong men; another is required to hold his tongue; a fourth to twitch the nose, a fifth to pick up one of the fore-legs; then comes the operator, making six in all, at the lowest computation. From the great fuss, and the formidable nature of the preliminary proceedings, the horse becomes so frightened that, should he be one of a spirited nature, a most determined resistance will be offered to all your efforts; and should this way of operating be proceeded with, it may be found necessary to cast him before it can be performed; and in a case of obstructed œsophagus, the stomach being highly inflated with gas, we run the imminent risk of rupturing that viscus, or some of the bowels, in the fall. Whilst on the other hand, by using a suitable instrument, and passing it *per nares*, the attendance of only one assistant is required, and the horse's head may be simply held in the natural position—the flexibility of the probang accommodating itself to the gentle curve between the posterior nares and pharynx, and finding its way as naturally into the œsophagus as a sword into its scabbard; very rarely a simple twitch is necessary; even then one person is sufficient for all purposes.

Obstructions of the œsophagus being at times difficult to remove, we would say a few words about the treatment of its consequence—viz., Tympanitis. Where the distension is very urgent, and asphyxia threatened, great benefit is derived by the application of icy-cold water to the abdomen. This is best done by placing round the belly a woollen blanket, folded several plies thick, quantities of ice being placed in the water used as an additional refrigerant—a steady stream of which should be kept up as long as possible. Water from a deep well in summer, medicated with potass. nit. and sal ammoniac, will give a low temperature of a very effective character; this will be found useful in tympany arising from the same cause in cattle and sheep.

We should never despise knowledge which is the result of practical observation, no matter from how humble or unpretentious a source it may be derived. The idea of the application of cold water to the abdomen, to subdue tympany, by causing condensation of the evolved gases, first occurred to us from the remarks of an old shepherd with whom we conversed some years ago. In speaking of sheep suffering from flatulent distension of the rumen, amongst which occasionally it very suddenly appears, affecting often at the same time from 10 to 12 per cent. of a flock, he said: "If I am near a stream of water deep enough, I put the affected ones in, one after the other, and let them swim down two or three hundred yards, when they generally come out all right." Although this man had not sufficient education to understand how this change was brought about, yet he did it simply because he saw its good effect. It appears, from what my informant said, that his knowledge of this beneficial circumstance was quite the result of an accident. One day, having a sheep badly "hove," he took the animal to the bank of a stream, with a view to obtain water for mixing a drink for him. This being done, he essayed to administer it in the usual manner; but his charge struggled violently, to avoid the dose. Having no assistance, he was incapable of holding him, and during the tussle for mastery, his woolly friend fell over the bank into the stream. The descent being steep at that point, and the sheep being seen swimming lustily down with the current, the shepherd ran after him, along the course of the brooklet, to a spot about three hundred yards

lower down, where the banks were low and favourable for landing. The sheep here came out of the water, and his keeper was astonished to find that the symptoms of Hoven had entirely disappeared, and the animal was none the worse in other respects for his unexpected ducking. After this occurrence, he had resorted with great success to swimming his flock whenever Tympany appeared amongst them. In general practice, amongst horses this will not be found to have the magical effect seen in the sheep; but it does help to reduce it considerably, and prevents, to a great extent, further accumulations, till relief can be afforded by the regular passage.

The stomach of the horse partakes of the *compound* character; and why the organ has not been described as such by anatomists, we are at a loss to understand. It is to this peculiarity in its structural development we would now refer the reader, as the only true means by which a certain peculiarity can be correctly explained. Taking an external view of the organ, we see an elongated sack, divided partially in the middle by a natural constriction, which separates the pendulous, or lower portions, into what we may term a left and right fundus; the left, or cardiac portion, is seen to be far more capacious than the right, and will, by an off-hand computation, hold not less than three or four times the quantity of food more than the right. The cardiac sac is lined with a white cuticular membrane, which is continuous with that of the œsophagus; this portion of the stomach might be regarded as a mere dilatation of the gullet—and with some show of truth, as it possesses no claim whatever to be considered a portion of the true gastric pouch, since its walls contain none of the structures common to the veritable stomachs of mammals. This left cuticular sac will be found to be much deeper than the right, and its fundus lies far below the level of the right or pyloric portion. This part is undoubtedly intended as a temporary receptacle for both food and water, the principal weight of which is thrown upon it; and from its position being below the level of the true digestive portion, it retains water, and prevents the pyloric end becoming over-distended and impacted with food, —and thus interruption of the digestive process is avoided.

We must then regard the left deep fundus of the stomach as

a reserve macerating pouch, from which the food is gradually supplied to the pyloric or true digestive end. But when, from long fasting, the horse over-gorges himself, these functions are interrupted—the true digestive end having more forced upon it than it can deal with; over-distension, paralysis of the organ, and brain symptoms being the result, which are known as "*stomach staggers.*" When we remember the rapidity with which the horse masticates and swallows hard, dry substances, we shall at once see that such a conformation in his organism is a bountiful provision of nature, by which these materials may be softened and reduced to a pulpy condition before they are submitted to the action of the true digestive portion of the viscus.

Cattle possess very extensive complex stomachs for the maceration of food, and in addition have the advantage generally of living on a much softer diet, which goes twice through the process of mastication and insalivation; therefore they may be said to possess greater facilities than the horse for the performance of perfect digestion. It may be considered almost impossible, in creative nature, to design and produce an animal capable of great speed, activity, and endurance, with such a large and complicated preponderance of gastric viscera as is met with in the ox. We therefore find it dispensed with in the equine tribe; only one small macerating compartment, the cuticular portion of the stomach, being allowed him as an aid to the preparation of the ingesta for chymification. This preparatory gastric pouch being lined by an *insensible* cuticular membrane, all substances swallowed by the horse are retained, vomition or regurgitation rarely taking place; and should such substances be of a nauseating or irritating character, their action on the nervous system is not felt, owing to the *insensibility* of the lining membrane with which they are brought in contact. This is the true reason why vomition is so rarely seen in the horse, and the absence of which has led to so many unfounded statements as to mechanical impediments to vomition in this animal, which have no existence except in the minds of their promulgators.

The horse being a creature of speed, and a native of that portion of the earth's belt known as the torrid zone, his very existence would at times depend upon the rapidity with which

he could distance the many beasts of prey common to those regions; and as he does not possess the terrible sharp horny spears of the bovine tribe, with which to vanquish his enemies, speed with him becomes the great desideratum for existence; and without it extinction of the species might reasonably be expected to have taken place ages before he was subdued and domesticated by both civilized and barbarous races of men. This quality, together with very exquisite powers of hearing, seeing, and smelling, may be said to have been the true preserving faculties of the horse in his wild state.

When hunting wild horses on the south-western prairies of North America, some years ago, we found that in stalking a herd, if we chanced to get on the weather side of them, although we might be a mile distant, yet the herd caught our wind, and by the mere power of smell alone the whole took the alarm, and galloped off at full speed, rendering all attempts at following quite useless. In some parts of the Great West we found, during the winter, that the Indian ponies lived almost entirely on the bark of certain trees, which they tore off with their incisor teeth; their improvident owners—the wild nomads of the West—never taking the trouble to gather and lay by a winter stock of prairie hay for their consumption. This again is a good exemplification of the great value of the insensible, cuticular, macerating division of the horse's stomach. The sensible portion would certainly never be able to digest such materials with but one slight mastication, were it not for the good offices of this portion of the viscus.

The great left fundus retains for a time all water poured into it, which falls below the level of the pyloric sac; to this portion and the cœcum must we look for the reserve supplies, which enables the horse to perform long, arduous journeys in the heat of a burning tropical sun without water, when man himself will fall down exhausted in a third of the time if deprived of it.

It has been stated that it is a very bad practice to give a copious draught of water immediately after a meal—for the reason, it is supposed, that the water will carry with it out of the stomach into the intestines portions of undigested corn, and thereby cause Colic or other enteric derangement; but such an

idea is entirely fallacious. In health the pyloric end of the stomach possesses a selective power and sentient irritability, which refuses to permit anything to pass it which has not been subjected to the digestive process peculiar to the organ. Grains of corn are often found in a partly undigested state in the excrement; but the cause of this must be looked for in deficient mastication and insalivation. All substances which have fairly undergone this first process, and even those which have not, will not be permitted to pass out of the organ before they have been acted upon by the gastric juice; all hard dry aliment, such as oats, covered by a tough impervious case, and which has not undergone the first or preparatory stage (*i.e.* been bolted) are submitted along with the rest of the food to the action of the juices of the stomach, and after undergoing the same amount of digestive force as the other aliment, whether chymified or not, they are permitted to pass into the duodenum along with the bulk of the ingesta—being considerably softened, although not reduced to the desired state. Yet, in virtue of the maceration and softening undergone, they have lost the power of acting as an irritant to other portions of the intestinal tube and to the pylorus itself.

A draught of water after a meal does good, should the stomach call for it; and unless there is a necessity for fluid, the healthy horse will not, neither can he be forced to, drink it. In speaking of the passage of water through the stomach, it should be remembered we are not washing out a cavity like a common trough or pipe, through which substances can be swilled at will. There is a watchman at the outer gate who will not allow anything to pass, whether it is digestible or not, until it has been fairly subjected to a trial; and after such trial has taken place, and proved inefficacious, the bad is permitted to pass out mixed with large quantities of the good—*i.e.*, the properly chymified food. This great natural power of selective sentiency is broadly marked throughout all animals possessing true stomachs; and in some of these it is manifested to such a striking extent, that we positively find the pyloric end of the stomach armed with *teeth*, by the means of which materials defying the action of the digestive juices may undergo a second mastication, and thus be

brought within the power of the organ rather than be permitted to proceed unacted upon. A draught of water given to a healthy mammal can carry with it from the stomach nothing, unless it has been submitted to its physiological action; and unmasticated substances of exceptional hardness pass out along with the food not one whit the sooner or later, whether water is given after a meal or not. If this were not so, woe betide the race of man when engaged at their sumptuous repasts, where the wine flows freely, and the cup is quaffed—not occasionally, as a necessity, but continuously, as a source of exhilaration and pleasure only!

Having repeatedly examined the course of the œsophagus, from the pharynx to the cardiac extremity, we fail to find the *acute angle* before mentioned in the first lines of this paper, and think the wish for its existence (to back out an untenable hypothesis) to be the father of its creation. A modern and well-received work on veterinary anatomy says, in describing the course of the œsophagus in the horse: "In its passage from the pharynx it passes down the neck at the back of the trachea, then inclines to the left, entering the thorax with it; it then gains the upper side of the trachea, surmounts the base of the heart, leads through the posterior mediastinum, penetrates the diaphragm in the *foramen sinistrum*, gains the abdominal cavity, and terminates on the cardiac orifice of the stomach."

During its whole course we find nothing but the gentlest of undulations; and just before it dilates into the form of the stomach it makes a slight curve, which in no reasonable manner can be said to hinder vomition in any degree whatever. Viewing (as a natural philosopher) the horizontal position of the horse, his mechanical facilities for vomition are far superior to those of man in whom it is so common.

The attitude of man being perpendicular, vomition in him has to be performed usually by means of an upright tube—which does not possess one single advantage or feature favourable to its accomplishment. The abdominal muscles have to force directly upwards the whole of the contained viscera against the *great curvature* of the stomach; the lungs are inflated, the diaphragm being pressed downwards; these two compressive

actions from above and below, the antiperistalsis and contraction of the walls of the organ, succeed in driving both solids and fluids with great force up a vertical tube communicating with the external air, till all is evacuated. This, we know, is commonly done directly against the force of gravity by weakly persons and infants, and rupture of the viscus is a great rarity.

The horse, standing on all fours, possesses far greater advantages for its performance, both mechanically and physiologically. His abdominal walls are far thicker, stronger, and more powerful proportionally; the contained viscera have merely to be pressed forward, on a level plane, against the *fundus* or great curvature of the stomach. The organ being smaller in proportion to the size of the animal than in man, is easier to evacuate; its contents when propelled forward are afforded greater facilities on their passage out, having to travel for the first half of the distance along an almost level tract, the undulations of which place the force of gravity in its favour, until arrived at the place of exit from the chest; when, assisted by the increased impetus and the antiperistaltic contractility of the organ through which it is passing, it flies with the greatest ease up a gently inclined tube to the external air; and should he, in the act, place his nose to the ground, which he sometimes does, the attraction of gravity is favourable to him from stomach to mouth. And again, if the cardiac orifice be dilated by relaxation of its muscular fibres, which it is allowed to be in vomition by experimental physiologists, the liquid contents of the organ might almost run out without any assistance whatever.

We see then, quite plainly, that all things agree in demonstrating that vomition in the horse is much more easily accomplished than in man; and, indeed, those who have witnessed it in the horse will at once agree that the animal does not evince anything like the violent physical distress exhibited by our own species when clearing the stomach by the same method. When inflammation or violent irritation of the stomach takes place in the horse, we at once see the great facility with which every substance, either solid or liquid, is thrown from it; but, as we have before observed, such conditions are rarely met with in the equine tribe—the *vis preservatrix naturæ* being powerfully present

in the stomach, and its capability for resisting disease marvellous.

This fact, along with the circumstance of the cuticular portion being so insensible to impressions made upon it by the ingesta has led to the promulgation of the doctrine of non-vomition in the horse, and many other unfounded statements based thereon.

In no other species of the mammiferous class, except ruminants, the horse, ass, and the various tribes of the zebra species—the last three of which possess but one gastric pouch of a semi-compound character—do we find animals difficult to nauseate, and free from the action of emetics. The pottassic tartrate of antimony, cupri. sulph., zinci. sulph., ipecacuanha, mustard, tobacco, and, in short, the whole role of emetic substances, we know have no effect whatever on these in producing vomition; and unless given in such an enormously poisonous quantity as to produce Gastritis, with all its fearful results, no vomition nor nausea will be seen.

Although it could not be expected that animals which are intended by nature to subsist and enjoy good health on substances which appear to us, when viewed in the light of human food, to be of the most irritating, coarse, and indigestible character, should show their digestive apparatus to be as sensible to the action of nauseating, irritant emetics, as those which live under more refined conditions. Yet, in a proportionably less degree, we should get a modified action in this respect, were it not for this insensible cuticular receptacle forming the great left sac of the stomach—which, being totally devoid of sentiency, and consequently incapable of communicating the feeling of nausea to the nervous system, retains for a length of time these substances, macerating them, and generally mixing them with the contained aliment.

By the time these drugs are passed gradually on to the antrum pylori, they have undergone a chemical change; their force is weakened by admixture with the insalivated food, etc.; and, owing to the reasons before-mentioned—viz., the lesser natural irritability of the organs—than in omnivora and carnivora, they pass off with little or no apparent effect, except that of a tonic

character (in some instances), by simply causing an increase in the secretion of the digestive juices and regular blood supply, also a corresponding one in the assimilating powers.

(*To be continued.*)

CONTAGIOUS DISEASES AMONG CATTLE IN THE UNITED STATES OF AMERICA.*

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PLEURO-PNEUMONIA, Epizoötic Aphtha (Foot-and-Mouth Disease), and Texas Cattle Fever (Splenic Fever, Spanish Fever), are three contagious diseases which have prevailed among cattle in this section of the country, and without doubt will again prevail. It is the duty of the members of the veterinary profession who have not had the opportunity of practically informing themselves by personal examination of diseased animals, to investigate the subject, and be prepared to recognise and treat the diseases whenever an outbreak may occur.

Pleuro-pneumonia, the most important of the three, was first imported into Massachusetts in 1859, from Holland, and by the sale of cattle was carried to different sections of the State.

The first outbreak occurred sixty miles distant from the farm where the Dutch cattle were kept—confirming the opinion of those who believed in the contagiousness of the disease.

The most eminent veterinarians are firm believers in the theory of contagion,—among them, Delafond of France, Hertwig of Berlin, and Simonds of London. In what manner the disease is conveyed is not known. There is, however, little doubt but that it is transmitted by inhaling the expired air from a diseased animal; and from published accounts it appears that the disease may be communicated without coming in direct contact with the living diseased subject.

In a paper by P. Verheyen, Professor at the Veterinary School

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Brussels, we find the following:—"The whole of the preceding accounts evidently prove that the Pleuro-pneumonia Epizoötica is contagious. But is it equally transmitted by immediate contact? Several veterinary surgeons are of the opinion that it is, and Tscheulins quotes an example: A Jew purchased an ox, which he placed in a stable containing three other beasts. The ox had been there only a few days when he began to cough, and he died on the twelfth day of Pleuro-pneumonia. A few days elapsed, when the cow which stood next to him became diseased, and also died; and the two others shared the same fate. The farrier of the village, who had treated these cows, came frequently in contact with his own cows, which he was in the habit of feeding; and they all contracted the disease and died.

"Professor Delafond, now a believer in contagion, but which at first he doubted, has collected such a number of facts as have completely convinced him of the contagious nature of the disease. He has classified the facts which he has reported, and which prove that the disease is transmitted in stables, pastures, and through the offal of the carcases. Other observations confirm the infectious properties of the offal of carcases of animals that have died of this epizoötic.

"Hermann, vétérinaire, Switzerland, relates a case of an ox affected with Pneumonia, which dropped dead as he was led to the common watering-trough. The other cattle smelled him as they passed by, and within from six to eight weeks after, twelve of them were attacked with Pleuro-pneumonia; and from that time the disease spread and invaded the whole district."

Many writers believe that healthy animals will contract the malady by being placed in stables from which diseased cattle have been removed; also from the clothing worn by persons in charge of the sick. The experiments in this State, made by order of the Governor and Council, were conclusive of the contagiousness of the disease; also of the fact that an animal should be in the early stage of the disease to convey it to others. It is reasonable to suppose that, after the diseased portion of the lung is encysted, the passage of air through the bronchial tubes to the diseased lung being cut off by the sac, unless communi-

cation is re-established, the animal would be safe to mingle with others.

Symptoms.—In the early stage a slight husky cough may be heard, with increased respiration. As the disease advances, the cough is almost constant, being suppressed through soreness. The eyes are dim, head depressed, appetite lost, pulse accelerated and somewhat weak, rumination suspended, and great prostration sets in.

On percussion, a dull dead sound will be emitted over the diseased portion of the chest.

Auscultation proves the absence of respiratory murmur over that part, with increased sound over the remainder.

The symptoms are not materially different from simple Pleuro-pneumonia.

Pathological Anatomy.

In a report to his Excellency the Governor, by Dr. Morril Wyman, of Cambridge (1863), in this State, who experimented at his own expense upon the contagiousness of Pleuro-pneumonia, he says: "It is admitted by believers in its contagiousness that there are two forms of the disease—one contagious, the other non-contagious—the symptoms and *anatomical appearances* of which are similar, and cannot be distinguished otherwise than by the fact of transmission." My own experience, limited though it be, from the fact that but a small number of cases of Sporadic Pleuro-pneumonia have occurred during a practice of nearly thirty years largely among cattle, has shown that the peculiar marbled appearance caused by the thickened interlobular tissue, as described by the most distinguished authors who have written on the subject, is not found. The report of the Commissioner of Agriculture on the diseases of cattle in the United States, contains a report of Dr. J. J. Woodward, U.S.A., on the "Pathological Anatomy and Histology of the Respiratory Organs in the Pleuro-pneumonia of Cattle," from which is extracted the following: "The peculiar appearance produced by the yellowish thickening of the interlobular septa, combined with œdema and congestion, or red hepatization of the parenchyma of the lobules involved, was seldom absent from some portion of the affected

lung. This is the phenomenon most likely to arrest the attention of observers familiar with the *post-mortem* appearances of Pleuro-pneumonia in the human subject, when their attention is for the first time directed to the disease in cattle. It is conditioned by the peculiar anatomical arrangement of the lungs of these animals, in which the lobules are separated from each other by processes of the pleura, or by septa of loose connective tissue, to an extent which has no parallel in the human subject. The inflammation of the pleura speedily extends to these loose inter-lobular septa, in which a rapid lymph formation takes place, resulting in the production of the thick yellowish layers above described." The dark-red spots in the pulmonary tissue, which, with the infiltrated interlobular and interstitial tissue, cause the marbled aspect produced by the compression of the air-cells of the lungs, and prevent the entrance of the atmospheric air into them, are due to the non-entrance of the oxygen of the air into the cells, so that the blood cannot be decarbonized. In most cases, at an early stage, serum will be found in the thorax, the pleura is covered by a false membrane, which varies in different cases, and which eventually becomes firmly adherent. During the second stage, which may be said to exist between the twentieth and thirtieth days, the diseased portion of lung becomes enclosed in a sac several lines in thickness, and is said to be composed of newly-formed cellular tissue.

In the last stage, on cutting through this sac, the solid lung-tissue will be found to be covered with pus; and for several months the interlobular and cellular tissue may be easily distinguished on the cut surface in most cases. In from twelve to eighteen months the mass will have been dissolved, and the pus absorbed, leaving perhaps a little caseous matter.

Treatment.—The extreme debility which accompanies the disease precludes the use of depletory remedies. Cathartics should be avoided; although, if the bowels are constipated, an aperient may be given with benefit. Tonics, stimulants, and diuretics are most to be depended upon—counter-irritation in some cases, by the inflammation it excites in the skin, artificially producing a disease analogous to that of the lungs, thereby giving relief to those organs.

Such, in brief, is the treatment recommended by most practitioners; and if dealers and owners of cattle were not human, and it was profitable, and provided they would isolate their cattle, and keep them months until the disease exhausted itself in the herd before selling or purchasing others, treatment would possibly be advisable; but from the fact that the period of incubation is so long (from forty to fifty days), there is a strong incentive to get rid of their cattle, trusting to luck that they may escape detection. They will, as soon as an outbreak occurs, send all that do not show symptoms of disease to the public market, scattering the disease far and wide. As it is, the pole-axe is the only safe and effectual remedy. As soon as the fact is established that the disease exists in a herd, *kill the whole;* bury the sick, and sell the healthy for beef.

Epizöotic Aphtha, or Foot-and-Mouth Disease.

In the autumn of 1870, Epizöotic Aphtha was introduced into Massachusetts. It was distinctly traced to Canada. A Mr. Cochram imported some cattle, which conveyed the disease to his herd. He being a dealer as well as breeder, scattered it far and wide. The consequence was, cattle were sent to Albany from infected herds, and thence to Brighton, the grand centre of supply, both of beef and milch cows.

The disease being eminently contagious, and not usually fatal, the Commissioners interdicted trade at that market, excepting in beef cattle; also ordered strict isolation of all infected, under heavy penalties. During the following summer the disease was extirpated, and has not been heard of since in this locality; which is remarkable from the fact that during the winter, when the cattle-yards were frozen, the cattle which were unsold and remained in the yards for a week were not infected. As soon as the ground thawed, such animals contracted the disease. As a precautionary measure, orders were issued to have all manure on infected premises taken to the fields by horses; also prohibiting cattle from being turned into those fields until the manure was covered by the soil. It is hardly to be supposed that the orders were obeyed; yet nothing more was heard of the

disease—showing that freezing does not kill the virus, while heat apparently does.

Symptoms.—At the commencement of the disease the animal is dull and inclined to stand still, with the head depressed and the back arched; if the hind-feet are affected, they are suddenly snatched up and shaken, as though to avoid something that annoys. Shortly after the attack, vesicles filled with a limpid fluid appear on the inside of the upper lip, on the tongue, palate, between the digits, and around the top of the hoofs.

From published reports of other countries, the presumption is that in this State, with a few exceptions, the disease assumed a mild form; for in a few days after the attack the vesicles burst and discharged their contents, the abraded surface healed quickly, the lameness ceased, the secretion of milk, which had been considerably lessened, returned, the animal regained its appetite, and soon recovered its lost condition. A few cases were reported of extreme emaciation, sloughing of the hoofs, and death.

Treatment.—It is apparent, from the above description of the disease, that but little treatment is required, and that of a mild character.

Diluted carbolic acid applied to the feet, and a weak solution of sulphate of alumina applied to the abraded parts of the lips, tongue, and palate, is all that is required in a large majority of cases.

Sometimes, however, it is necessary to feed the animal from a bottle—the lips and tongue being so extensively affected that the creature is unable to draw liquids into the mouth. Animals will sometimes manage to get a little soft green grass into the mouth and swallow it. Hay should not be put before them; as the appetite craves it, but they cannot masticate it.

Spanish Fever, Texas Cattle Fever, or Splenic Fever.

Although the above-named malady is not strictly contagious, from the fact that native cattle do not convey it to other cattle, the immense losses which have occurred by the introduction of South-western cattle to the farmers and graziers of the Western States, either by contact or by grazing in their trail, render it

a disease capable of classification with those of a contagious nature.

The date of the introduction of the disease by Texas cattle is uncertain. In the Missouri Agricultural Report of 1866, we find the following: "This is not a new pest in the State, as the statistics show. There was, however, almost an entire immunity from the disease during the war, when the driving in of Texas cattle was almost entirely suspended, with the exception of a very few isolated cases, which gave rise to the only cases occurring during the war." In the same report, in a communication from Dr. Albert Badger, of Vernon Co., he writes: "The Spanish or Texas Fever is well known to the older residents of this county. This disease was first recognised as having been propagated by cattle driven from Texas some twelve or thirteen years ago—the disease having been in the county some two seasons previous to its having been traced to Texas cattle."

The report of the Commissioner of Agriculture, published in 1871, of investigations made by a distinguished veterinarian (Professor Gamgee)—his investigation extending from Illinois over Indiana, Kentucky, Missouri, Kansas, and Texas—makes it the most valuable descriptive paper on the nature of the disease in question yet published. The report also contains the researches of Mr. H. W. Ravenal, of Aiken, South Carolina, so well known as an enthusiastic and reliable observer and collector in the field of cryptogamic botany, who accompanied him to ascertain whether the Texas Cattle Fever did owe its origin, as alleged by the New York Commissioners, to a cryptogamic vegetation or not.

The report of Drs. J. S. Billings and E. Curtis, U.S.A., who examined the material furnished by Professor Gamgee, is published in the same report, and should be obtained by every veterinary practitioner.

Professor Gamgee designated the disease as "Splenic Fever of Cattle," "for the reason that the disease is readily distinguished, as a rule, by the enlargement of the spleen—coupled, no doubt, with other lesions; it is peculiar to the ox tribe. It is, so far as we have ascertained, incapable of communication by the simple

contact of sick with healthy animals, and in the strict sense of the term is neither contagious nor infectious.

"It is an enzoötic disorder probably due to the food on which Southern cattle subsist, whereby the systems of these animals become charged with deleterious principles that are afterward propagated and dispersed by the excreta of apparently healthy as well as obviously sick stock."

Symptoms.—In visiting a field where both the sick and healthy are mingled together, one can at sight almost invariably select the sick, without approaching them. They will be found, if standing, with the head drooping, ears depressed, the back arched, and disinclined to move,—a rapid pulse and quick respiration. The fæces are usually dry, and sometimes stained with blood; in most cases the urine is of a dark-red colour. The temperature indicated by the thermometer is usually high; in one case, however, I found it less than 85° Fahrenheit: probably the animal would not have long survived had she not been killed. The period of incubation is not definitely settled; in some cases it would appear that two weeks were sufficient for the development of the disease, in others eight or ten weeks; and in one instance, which came under my personal observation, the owner declared that the animal had never been where the Texans had grazed, consequently must have taken the disease from his native cattle—which statement had but little weight, from the fact that Texans will go anywhere they please. He, however, was confident that Texas cattle had not been in that vicinity for at least one hundred days; which, if correct, would be a long period of incubation.

Post-mortem Appearances.—The thoracic viscera are usually found healthy—as also are the first, second, and third stomachs: the mucous membrane of the fourth stomach is of a dark-red colour, sometimes with ecchymosed spots; and I would here observe that in examining the same membrane in Texas cattle, cicatrices were found indicating that the animal had formerly suffered from the same malady. The liver is often congested, though not always, and the gall-bladder distended with dark viscid bile. The spleen is always enlarged, weighing from two-and-three-quarter pounds (the smallest I found last year) to

fifteen pounds and upwards; its texture is soft and sometimes ruptured. The kidneys are usually congested; the urinary bladder filled, and often greatly distended, with a dark-red coloured urine. In some cases which I examined, the kidneys were found healthy; also the urine, at least to the naked eye; consequently, one may form a correct opinion independent of the condition of the kidneys and urine. Where there is enlargement and softening of the spleen, with redness and erosion of the abomasum, it is safe to pronounce the disease Splenic Fever.

Treatment.—In the early stage an active cathartic is indicated, after which stimulants, diaphoretics and diuretics, with plenty of mucilaginous drinks, should be given; some animals have recovered under the above treatment, and some without. In one of the Western States, on a farm, the cattle were sick and dying. The owner, as an experiment, turned them into a field of green corn, which produced purging. Many recovered. In Southwest Missouri a gentleman writes that "he has lost one hundred and fifty head of cattle by the disease. Their bowels became very costive; in fact, it seemed as if their intestines became entirely dry, and unless an operation could be obtained they died. Our most successful mode of treatment was to make them swallow a piece of fat bacon, and force another one up the rectum with the arm, as large as admissible, and as far as possible. We saved about sixty after we adopted this mode of treatment."

We have herein given, as briefly as possible, a concise description of three contagious diseases—two of which have devastated the herds of the United States, and which will probably continue to do so in years to come; and it is our duty, as veterinary practitioners, to be prepared to recognise them when they appear, and unite with the authorities in stamping them out by vigorous and well-timed measures.

CASE OF DOUBLE TORSION OF THE CERVIX UTERI IN A MARE.

BY W. A. COX, M.R.C.V.S., ARDWICK, MANCHESTER.

[The extreme rarity of uterine torsion in the pregnant mare, to judge by the paucity of cases recorded in veterinary literature, induced us to ask Mr. Cox to furnish our readers with details of the case casually alluded to by him in his paper on "Veterinary Obstetrics," in vol. i., p. 263. This request he has most obligingly complied with.]

THE animal was the property of Mr. Beard, of Kniveton, near Ashbourne; and early in May, 1864, I was requested to attend her, as she was unable to foal; labour pains had been manifested for some hours, and although the fore-feet of the fœtus were presented, no further progress had been made.

I found her standing, exhibiting no acute pain of any kind; respiration extremely quickened, and frequent sighing; the pulse scarcely distinguishable, and running down; restlessness and profuse cold perspiration; the mucous membranes were blanched, and the extremities cold. No parturient pains were exhibited.

The feet of the fœtus—evidently the fore ones—were visible. Manual examination proved the head to be presenting in a straight line, the nose being close to the vulva; on passing the hand down the neck, the abnormal symptoms were explained: the fore-legs up to the elbows, the head, and one-third of the neck, were properly presented, and lay in the vagina; the remainder of the fœtus was *underneath* the floor of the passage; the hand was then passed over the fœtus up to the os uteri, and it was sufficiently dilated to admit it, but in a straight line the cervix was imperforate.

Careful examination discovered an opening to the right, slightly upward, then turning downwards and to the left, and again to the right; with difficulty, owing to the small calibre, the hand was threaded through this passage, but the utmost exertion failed to pass it through into the uterus.

These convolutions convinced me that a *double* twist existed; had there been a turn to the right, and then downwards to the

left, and then a straight opening into the uterus, I should have diagnosed *a single twist;* but there were more convolutions. The symptoms exhibited demonstrated the rupture of important vessels, torn when the fœtus was forced through the uterus, back into the pelvic cavity, and through into the vagina.

The case was evidently hopeless; but the owner wished the foal removed, thinking it might be alive. This was done; but, as I had already told him, it was dead.

History.—The mare was of great value, and already the dam of several valuable entire horses; she was always in good condition, and never employed in extra-heavy work. A short time before she had suffered from an attack of Colic, and had repeatedly rolled from side to side; and it is extremely probable that the twist was given at that time. She showed nothing unusual after its subsidence. She was ten days or a fortnight beyond her time.

Cases of this kind are rare in the mare, and even in cattle are not frequent. I have two cases on record: one in an animal belonging to Mr. Toor, of Brassington, the other to Mr. Bestwick, of Hope. It was found impossible to deliver either.

In cases of single twist, which are not uncommon in cattle, the passage is upwards or downwards, and to either side—depending upon the direction of the twist. In these it is possible to introduce the arm; when, if the fœtus is in position, or not abnormally large, it may be delivered. The only risk is that of tearing the "shelves" of membrane found in the passage.

The feet must be corded and drawn separately through, guarding the digits; the head must also be corded, and the nose and lower jaw guarded in a similar manner. The expulsive pains of the dam, together with the constriction, sometimes render the operation protracted; the pressure from the fœtus, as it is drawn through, will often uncoil the twist.

There is another form of twist known as the *spiral;* but I shall speak of this in my article on Obstetricy.

I forgot to state that the mare died, and a double twist was found to exist.

IMPERVIOUS VAGINA IN A HEIFER.

BY A. E. MACGILLIVRAY, V.S., BANFF.

ON the 2nd September last I was called to a farm in this vicinity to see a two-year-old heifer, which was said to be labouring under *obstruction of the bowels*. On my arrival I found the quey very uneasy, straining every ten minutes or thereabouts, and passing now and again small hard pellets of dung; urine natural; abdomen hard and tense; breathing much hurried; pulse 75, and thermometer 104°.

The straining being suspicious-looking, I asked if the quey had been served with the bull, but was answered in the negative; and, on separating the *labiæ vulvæ*, I could see no abnormal signs, nor any appearance of unnatural discharge. Having consequently concluded that obstruction of the bowels was the principal detriment, and considering the amount of fever, I abstracted four quarts of blood, gave a strong saline purgative, and ordered very frequent enemas.

On calling on the 4th September, I found little, if any, difference in the symptoms; straining still continuing, dung very little softer; still no sign of any irritation about, or unnatural discharge from, the vulva. Ordered a dose of aloes, calomel, and ginger, to expedite the action of the previous purgative.

At my visit on the 5th September, I found the bowels acting very freely, but the straining was unabated. I again examined the vulva, but saw nothing abnormal. Thinking, however, that something might be wrong beyond the vulva, I asked Mr. Adam Sievwright, veterinary student, who was along with me, to bare his arm and explore the vaginal passage. On endeavouring to do so, Mr. Sievwright discovered that there was apparently *no passage* beyond the vulva; he could not get in a single finger. I bade him use considerable force, as I thought it might be merely an extra tightness at the *ostium vaginæ—i.e.*, the contracted part between the vulva and vagina. After using great efforts, he managed to get one finger forced in about an inch, but found no vaginal canal; the walls of the passage (if ever such had existed) appeared to be firmly grown together. The heifer was now straining so tremendously as to leave little doubt that some

irritation about the generative organs was the sole cause of her illness; and believing such to be the case, I ordered Mr. Sievwright to continue pushing his way into where the vagina ought to have been. After much difficulty, he got two fingers pushed some four or five inches through what I may be allowed to call the *impervious vaginal canal*, and then there immediately escaped therefrom a dark-brown fluid having a most abominable smell. This fluid thereafter came in variable quantities every time the quey strained.

Fancying that the confined abnormal fluid would, by means of the small vent made, now find its way out, and thus do away with the cause of the straining and relieve the quey, I resolved to leave her for another day. But, on calling next morning, I found her still severely straining, and passing small quantities of the same fluid.

On endeavouring to explore the vagina, I could get my hand no farther into the canal than the posterior part of the vulva. After considerable search, however, I found the small opening previously made into the impervious vagina by Mr. Sievwright, and it merely permitted the entry of one of my fingers. I could now easily feel that the walls of the vagina were firmly grown together—if ever they had been separate, which I don't think they had. So firmly was the passage shut up, that it was only after an immense amount of careful manipulation that I managed to get my hand as far as the uterus.

I had literally to tear open the vagina per force, from vulva to os uteri; it was just similar to forcing one's hand into a piece of raw firm muscular tissue. The os uteri was fully dilated, and the uterus itself had seemingly been pretty much distended by the imprisoned fluid.

As the heifer was now in extreme pain, and there being little hopes of a permanent recovery, and as she was in high condition, I advised her being sent to the butcher. This was done; but, unfortunately, I did not get a look at the vagina and uterus after death.

This case owes much of its interest, in my eyes, to the fact that it goes to prove the existence of a *menstrual discharge* in the brute-female, analogous to that in the human-female. I am

aware, from medical records and otherwise, that instances in the human subject, precisely similar to the above, are by no means uncommonly rare; and in such cases, and the one above detailed, the symptoms are quite alike. In the human subject we have the same abdominal derangements: extreme tenseness, costiveness, and, what is called in medical parlance, a *bearing-down* feeling. In the human patient the fluid imprisoned in the uterus is at times got rid of by cutting through the vaginal adhesions, and sometimes by puncturing the distended uterus through the walls of the rectum, and *thus* allowing the diseased fluid to escape. But not seldom (in woman) death is the result, often following the absorption into the system of part of the fluid imprisoned *in utero*.

In the case under consideration, the œstral products (however many times the heifer had been "in heat") had evidently never found exit from the uterus; and the result was the immense collection of a most abominably-smelling sero-sanguineous fluid, which escaped after the forcible opening up of the hitherto impervious vaginal canal.

THE DEVELOPMENT OF THE OVARY IN THE MARE.

BY AN AMERICAN STUDENT AT THE ROYAL VETERINARY SCHOOL, BERLIN.

(*Continued from page* 353.)

The Histology of the Developed Ovary.

In the developed ovary nothing remains of the stroma, except here and there a few pigmentary granules. The chief mass of the ovarium is composed of the germinal plate, which has sunk into its substance. On the outer surface of the groove, caused by the inflection of the germinal plate, the epithelium is no longer to be seen. The follicles are mostly present on the limiting layers of the true tissue of the ovary; so that the larger ones, filled with *liquor folliculi*, are more peripheral, and the smaller are to be found towards the centrum (*see* Gurlt,

p. 434; Franck, 671; Leisering, 517; Franz Müller, *Vienna Quarterly Journal of Veterinary Medicine*, 368). The ovules measure 0·05 millimetre. The intercellular connective tissue of the former specimens now lodges considerable quantities of organic muscular tissue, the muscle cells of which are extended lengthways, and show the regular bacilli-shaped nucleus, 0·008 to 0·015 millimetre in size. The cells form bundles of fibres, which pursue a definite course. Under the serous connective tissue of the periphery are the circling septa of the ovarium. Some of these septa extend inwards and upwards, and in an apparently direct course toward the groove (or hilus); they also take a radiating course from the groove towards the periphery. Between the bundles of organic muscle fibres is connective tissue, which is proportionally rich in Inoblasts and poor in fibres. In addition, in the intermediate spaces the follicles are to be seen, as well as the remains of the *corpora lutea*, whose strongly pigmented cells and granules are observed between the muscle fibres. The serosa, with its stratified epithelium, does not differ much from that of the younger ovaries, and is loosely attached by means of connective tissue and the fibres of the firm ovarial stroma. In the subserous layers are likewise noted numerous vessels, from which only small branches pass into the substance of the ovary.

The following summary may be given of these few investigations. The ovary of the fœtus, during the last stages of fœtal development, differs unessentially from that of the developed animal. The chief mass of the ovary is formed by a soft tissue—the stroma—which is covered at its base by the serosa, and on the superior surface bears the germinal plate. With increasing age we find a decrease in the size of the ovary (Fritz Muller, *Vienna Quarterly Journal of Veterinary Medicine*, vol. xxxvi., p. 9; Chauveau's "Anatomy," Fleming's translation, p. 874; Franck's "Anatomie," p. 669). This goes on at the expense of the stroma, and, at the same time, there is an increase of the germinal plate; though this increase does not proceed equally in all directions, and one can only perceive a constant growth in thickness, and a continual encroachment on the substance of the stroma, with a decrease in the dimensions of

its external surface. Coincidently, there is to be seen a change of form in the ovarium; for while it previously presented an egg-shaped appearance, it now more resembles a boat. The decrease in size of the ovarium was still noticeable in that of the foal sixty-two days old; after that period an increase began to be perceptible. The outer surface of the germinal plate decreased steadily, and the plate itself contracted more and more, until it had the groove-like form which becomes an almost closed canal in the fully developed ovary. Finally, the organ exhibits the compressed bean-like form, the inflection (or groove) being perceived where the germ-plate formerly was. Originally, the *ligamentum ovarii* and fimbriated border were widely separated at opposite ends of the ovary; later they approach each other, owing to the contracting of the organ and curving of the ends, until in the fully developed ovary they are nearly, or even occasionally quite, in contact. At the same time a continual increase in thickness of the germinal plate, at the expense of the stroma, is witnessed; until at last the latter is almost wholly supplanted, and the entire ovarium consists of the germinal plate, although in a very changed form.

These changes of form take place almost entirely in the first year of extra-uterine life. Yet variations are occasionally observed; and these are sometimes due to individual peculiarities, at others to pathological conditions. In one case I found an ovary of seven and a half months development, which was far enough advanced to resemble that usually seen at the end of a year. In another instance, in a four-and-a-half-months'-old foal, the ovaries were no more developed than those of the thirty-three-days'-old foal. On account of the very limited number of subjects at my disposal wherein to study the ovarial development, it would be hazardous to attempt to fix any rules by which that process is governed. But we may affirm that the ovarium of a new-born foal is egg-shaped; that after some months it becomes cylindrical, then boat-shaped; and at the end of a year it has assumed the fully developed form. A better account of the phenomena pertaining to the changes in form of the ovary is difficult at present to give.

(*To be continued.*)

Editorial.

THE PROTECTION OF THE VETERINARY PROFESSION AND THE PUBLIC.

It will be seen from the very brief and imperfect report of the Proceedings of the Royal College of Veterinary Surgeons which appeared in the *Veterinary Journal* for November, that attention has at last been drawn to the necessity for protecting the members of the veterinary profession and the public from the evils of quackery, and that the matter will form a subject for discussion at the next quarterly meeting of Council. The question has not been brought forward an hour too early; indeed, the wonder is that it should exist at all,—and nothing but the extraordinary supineness, apathy, or indifference of the profession to its own best interests, can be invoked as an excuse for its being deferred to this time of day. There can be no doubt whatever, that when the Charter of Incorporation was obtained, more than thirty years ago, it was the determination of Her Majesty's Government that only those persons who received the diploma of the Royal College of Veterinary Surgeons should have the right to be designated, or to designate themselves, *Veterinary Surgeons*.

And nothing has occurred since that time which would lead us to infer that the determination has been modified in the slightest degree, or that the Government would not have given the full effect to this determination by making the adoption of the title by an unqualified person a penal offence, had it been asked to do so. But the boon has never been solicited; and great has been the injury to the profession, and directly and indirectly to the public, through this neglect. The unfortunate state of affairs which began soon after the Charter was obtained, and which reduced the Royal College to a mere appendage to, or instrument in the hands of, a teaching school whose entire history proves that its interests were rarely those of the profession, and that when these came in conflict with its own they were invariably sacrificed, appears to have banished altogether any idea of seeking that protection which was so necessary for the members of such a useful science; and this lamentable disunion has continued until quite recently, when it was resolved that the interests of that school should be made subordinate to those of the entire body of the profession. But, in the meantime, the unchecked evils of imposition and empiricism have wrought incalculable harm. Any one could, and can now, adopt the title of Veterinary Surgeon, and even that of Member of the Royal College of Veterinary Surgeons (which is the same thing), without let or hindrance; and in direct proportion as the value of veterinary science began to be appreciated, and the educational requirements of its students more exacting, so did the field become more favourable for the operations of the impostor, who impudently assumed the title of the qualified practitioner, and wore the borrowed plumes to his own advantage. Consequently, the country swarms with men who have the audacity to style themselves veterinary surgeons, or members of the College, and who know

little, if anything, of veterinary medicine,—men who, before their assumption of the title, may have been grooms, joiners, pig-dealers, cow-jobbers, or anything else; others are men who have been rejected as incompetent by the Examining Board of the Royal College, and who do not hesitate to unfairly assume that which they could not fairly win. And there is reason to believe that the recent decision as to increasing the period of study at the veterinary schools, and rendering the examination for the diploma more severe, will largely add to the number: indeed, we expect soon to see them disporting "Fellow of the Royal College of Veterinary Surgeons" on their signboards or door-plates,—many of them men who can scarcely write their own names, are utterly ignorant of the rudiments of medicine, and from their character and associations would be no credit to the meanest handicraft.

It is a very grave mistake to suppose for a moment that the education or professional ability of the veterinary surgeon will be ultimately successful in suppressing quackery. The man who would impose upon the public by usurping a title to which he knows he has no claim, is not to be deterred from making the most of the privileges which it may bring him; and human medicine gives us ample evidence that education and skill cannot contend against such people. But the veterinary surgeon is in a worse position than the doctor, as he is only too often at the mercy of grooms and coachmen, with whom he must not associate, nor bribe, as the impostor can and does. Neither can the general public always be made to distinguish between the real and the false; it is only too often quite sufficient that the person employed is designated a veterinary surgeon, and no question is asked as to whether the designation is genuine or assumed. The injury inflicted upon the veterinary profession by the misdeeds, malpractices, and disreputable conduct of ignorant pretenders, who usually belong to the lowest grade in society, is lamentable to think of; while the losses they cause to the public would form an appalling sum-total.

Surely the time has come when the provisions of the Charter, granted so many years ago, should be attempted to be carried into efficient operation. There never was, perhaps, a more favourable opportunity than the present, when the profession has shown itself so willing to raise the standard of education, and to further widen the interval existing between the farrier or cowleech and the scientific practitioner; when its members are unanimous in demanding—not so much that quackery may be suppressed, as that the designation which cost them time, money, severe mental labour, and much anxiety to procure, and which legally belongs to them only, may not be assumed by those who degrade it; and when, with a new mode of election for Councillorship, every member can exercise his influence in promoting the welfare of the entire body. And the public also need protection, in that men whose competency is not guaranteed by a responsible body, may not palm themselves off as possessing a guarantee, and by this imposition become entrusted with the health of valuable animals; while the Royal College itself should be the first to recognise the value of its diploma and its

own reputation, by taking steps to protect both from the damage undoubtedly inflicted upon them by those who falsely proclaim that they are its graduates. Care is taken to guard the public from imposition and fraud in almost everything; and every profession, we think, except our own, is protected, while perhaps none more needs protection.

Among the few advantages we enjoy, after our years of expensive study, is that of claiming, solely, the title of Veterinary Surgeon; and if Government strongly respects the rights and privileges of Englishmen, then surely we may ask that those which were specially conferred upon us by its own instrument may not be taken from us and abused. No Government can respect the rights and privileges of false titles, especially in medicine, when they may lead to so much harm. The profession does not ask for a *retrospective* Act of Parliament, whatever that may mean; it cannot demand that a groom, or tinker, who dubbed himself veterinary surgeon twenty years ago, and retired after a successful career of imposture, should now be punished for doing so. But it would scarcely be fair that, if he were still in practice, he should be recognised as legally entitled to the designation, merely because he had assumed it so many years ago. As a proof that the fact of a quack practising medicine for a long time gives him no exemption from punishment, we may mention that in a recent trial at Manchester, when five of these public nuisances were brought up and fined, one had been imposing on the public as a doctor for more than forty years. When Government introduces a penal Act for the suppression of adulteration of food, it does not exempt those who have been adulterating for many years, and allow them to continue their frauds for as long as they live; the dishonest practice must cease with the publication of the Act. And so, we feel assured, would be the purport of the Act which, we are confident, will readily be granted us if our claim is properly represented. To discuss what Government *may do* is mere waste of words. No formal or other application has ever, to our knowledge, been made for such protection as that we now seek; and we may safely predict that, in the best interests of the country, Government will readily comply with the prayer of our petition.

We have said nothing of those practitioners who only hold the certificate of the Highland and Agricultural Society of Scotland, but who have studied for the same period and in the same manner as the graduates of the Royal College, passed a similar examination, and many of whom are as distinguished in their science as any members of that College. We earnestly trust that a way may be found for their entrance into the Body Corporate. They share equally with the members of the Royal College whatever advance our science may make, and they equally suffer from the damage done by those who have not been trained or subjected to any test of fitness. The certificate system,—the unhappy legacy of school jealousy and narrow-mindedness,—at one time could be amply justified; but now it is injurious to veterinary science in this country; and while we must hope that it will soon be discontinued, we fervently wish that a compromise may be effected with those who are with us but not of us.

The days of selfish school domination at the Council meetings we trust are for ever gone by; and it is now felt that the graduate of the Royal College, no matter where he may have studied, has every right to his privileges in criticising, managing, or controlling its affairs.

With the obtainment of an Act of Parliament which will prevent unqualified men from falsely assuming the title of veterinary surgeon, there cannot be the least hesitation in asserting that one of the most important advances will have been made towards placing our science upon a proper and a more useful footing in this country. Very much of the apathy which it is only too evident largely and widely prevails in the profession, is due to the neglect, or something worse, with which the Council has treated this matter, and left its graduates to compete with unscrupulous, dishonourable men. Remove this just cause for complaint by at least making a fair attempt to obtain protection for them, and we will willingly stake our good name (if that has much value) that money and enthusiasm will not be wanting in the future.

The editorial remarks on the same subject in the *Lancet* of a few days ago, are as applicable to ourselves as to the medical profession: "Any Corporation which contents itself with granting qualifications to practise under its authority, but declines or neglects to assert the value of its diploma—tacitly admitting that, so far as any protection is concerned, the license is not a necessity—play not merely a careless but a shortsighted part. The licensing bodies have no moral right to leave their members and licenciates to take their chance with the public against unqualified practitioners."

HORSE-TRAVELLING IN FROSTY WEATHER.

Now that winter is again upon us, with its snow and frost and slippery roads, those who own or have the care of horses, and those who must travel them in all weathers, are all more or less interested in the means devised to enable them to do so without risk of injury or diminished utility. In the *Veterinary Journal* for last February, we took the opportunity of pointing out the great importance of the subject of horse-travelling in frosty weather; and besides showing how much our civilian traffic and intercourse depends upon the condition of the roads at such a season, we proved that grave disasters to armies in the field—as in the French retreat from Russia in 1812, and in the Danish retreat from Schleswig to Sonderburg in 1865—may occur when proper precautions are not adopted for enabling horses to move on ice-covered surfaces. We learn from the *Revue Vétérinaire* (October, 1876, p. 437) that the misfortunes of the French Army of the East, during the Franco-German war of 1870-1, were also mainly due to this neglect. "Our cavalry," says that journal, "composed of good horses, partly obtained by requisition, was reduced to impotency by the obstacles which the snow and ice opposed to its progress; while the cavalry of the German army, furnished with steel screw-studs (*grappes d'acier à vis*), marched, as the honourable General Martinez, one of the lieutenants of the unfortunate Bourbaki, informs us, with no more difficulty than if it was on the finest roads. This is a new instance," it adds, "for determining us to be provided for the future, and to discover the readiest and best frost-shoeing."

We particularly insisted on the inconvenience, expense, delay and injury attending the ordinary process of "roughing" horses' shoes, and also stated that we had tried every contrivance hitherto suggested with a view to supersede this "roughing," but that all had proved more or less objectionable—either through their inefficiency, expensiveness, or the difficulty of procuring or applying them when required for immediate use. We then described a most simple, cheap, effective, and readily applied method of our own, which has stood the test of four years' severe trial at Chatham, and has been extensively adopted throughout the country. This method merely consists in driving a steel stud, slightly tapering at one end, and pointed at the other, into holes in the shoe—these holes being two or three in number—one at each heel, and another at the toe if necessary. As there are some few details to be observed in making the holes and the studs, as well as in using the latter, both with regard to facility in manufacture and successful utilisation, and as these were not alluded to before, we think it may be of advantage to mention them now.

1. The method is applicable to any kind of shoe and for any kind of work. The holes are punched when the shoes are being fitted—all the horses shod at Chatham Barracks having them in their shoes after October. The draught-horses have three stud-holes in each shoe, the saddle-horses two—one at each heel. The hole is made by a slightly tapering square punch, which is

FIG 16.
Draught-horse Shoe, with three stud-holes.

about one-fourth of an inch in size at the point (Fig. 17); the punch is driven into the shoe as far as possible on the ground or lower surface, and a very light back-punching cuts out the scrap of metal and leaves the hole clear. The hole is consequently a little larger on the ground than on the foot surface of the shoe; it must not be distorted by subsequent hammering, as it should be exactly square, like the punch.

2. The stud is made from a three-eighths-of-an-inch steel rod (our farriers use up their old horse-rasps in these rods), and one or two may be manufactured at one heat. The point is drawn out on the off-side of the anvil, then the rod is nearly cut through about an inch from the end (Fig. 18), and the slight taper of the portion which fits into the shoe is given by a few blows of the hammer on the near side of the anvil (Fig. 19); the stud is then broken off ready for use—no filing or other preparation being necessary. With very little practice, the farrier can make seventy, eighty, or ninety in an hour, and without any gauge but merely his eye. The stud varies from one to one-

and-a-half inch; but of course it may be any length or size, so long as the punch is the same thickness.

No precaution is required to keep the holes clear when the studs are not in wear, as the point of a nail or a small chisel or awl will readily free them from dirt when necessary. The stud should fit the hole tightly, but must not pass quite through the shoe; when inserted, it should be fastened in by one or two smart taps on the point, the horse's weight then drives it home. The studs need only be inserted, of course, when the horses have to travel on ice or slippery roads; they can be removed by a few taps on each side and a smart blow on the face of the shoe—when they jump out. When worn very low in the shoe, a hammer and "buffer," or chisel, may be needed to start them.

FIG. 17.

FIG. 18.

FIG. 19.

A set of studs (value a penny or twopence) will last for a number of days, and when blunted only one in each shoe need be replaced. Going on a journey in winter, a few of these studs may be carried in the pocket in readiness for contingencies. They never break; if properly made (and any farrier's apprentice should be competent to make them), they very rarely indeed fall out (about three to five per cent.); and they can be fixed in the shoes or removed from them in a few minutes.

Such is our simple, cheap, and expeditious method of rendering horses serviceable during frosty weather, and protecting them from injury. It has been widely and most successfully tested by medical men and veterinary surgeons, particularly in Chatham and its neighbourhood—one of the most

difficult and dangerous localities for horses during winter; and we gladly avail ourselves of every opportunity of making it known, in the interests of horses and their owners. We have quite given up the use of screw studs, frost nails, and other appliances—troublesome, inefficient, expensive, or injurious as they all more or less are; and we can scarcely bring ourselves to believe that anything preferable to the method we have introduced will be readily devised. For ordinary weather, to secure a foothold, blunt studs may be used.

THE HORSE PLAGUE IN EGYPT.

ADVICES from Cairo, dated October 21, state that "fifteen thousand horses are said to have died in Egypt in the last three months. Pashas now ride on donkeys and even the Heir-apparent himself is to be seen coming in to his daily ministerial work on donkey-back." A correspondent writes to the *Times* of November 1, under date Mansura, Egypt, October 18: "Having been witness recently in many places to the extreme virulence of the horse and ass plague now raging in this country, it has forcibly struck me that sufficient attention has not been called to the subject in Europe. Not only has Cairo lost fully 75 per cent. of its beasts of burden, but in the villages fully 60 per cent. of the horses and 30 per cent. of the asses have succumbed, while the continuance of the pest threatens to destroy the remainder. Camels are said, in some parts, to be similarly attacked, and mules most certainly. The Government declares the disease to be a malignant Typhus, but many people insist that it is identical with the Cattle Plague of 1864, which was followed by the Cholera. Two great dangers menace Europe, and require prompt precautionary measures: 1. That the plague may spread into Syria by the caravan routes, and from thence into Asia and Europe; or into Turkey from the Egyptian contingent now acting with the Turkish forces. If this should occur, or should have occurred, the fact will probably be kept fatally secret until too late to prevent its spreading widely. Such was the case in this country, where prompt publication and strict quarantine regulations enforced from the outset would doubtless have confined the pest within narrow limits. 2. That Cholera or some other terrible disease may be engendered by the festering corpses which infect the Nile and the canals and ponds in every place." This writer saw 21 carcases pass that town in less than 30 minutes, and afterwards 13 stranded on a sandbank in all stages of putrefaction.

The spread of the disease resembled the extension of some of the early outbreaks of Anthrax recorded in "Animal Plagues:" it clung closely to one bank of the Nile—the right—and with the approach of cooler weather its virulence diminished, particularly after a severe storm. High-priced horses, well kept and well fed, were the most seriously attacked, and perished the soonest.

Sanitary measures, such as isolation and careful burial, have been adopted by the Government, and, with the change in the temperature, are likely to suppress the formidable pestilence.

The notion has been started that the disease is due to entozoa (worms); but there is ample evidence to show that they have little or nothing to do with its production.

We have just received a report on the malady by Drs. Bull and Fenger,* of Cairo, which leaves the nature of the deadly outbreak still doubtful. When they published their pamphlet, in less than two months the plague had swept

* "Un Mot sur l'Epizootie Chevaline au Caire en 1876." Cairo, 1876.

off about two-thirds of the horses there. In the hippodrome and in the stables of Boulaq, of 98 horses, 65 were attacked, and 7 only recovered; and in a stable alluded to, containing 65 horses, 40 were seized, and, notwithstanding all efforts made to save them, not one survived. The duration of the disease varied from one to four days; and Bull and Fenger assert that it has been difficult, if not impossible, to cure it. They therefore recommend preventive and suppressive measures, based on the supposition that "the poison is probably in the air," and that it must be prevented from entering the body by the mucous membrane of the respiratory organs—these being chiefly affected. They also recommend that horses should wear a muzzle made of double canvas, between the layers of which cotton steeped in carbolic and salicylic acids and dried, is placed; the mouth of the muzzle being provided with an elastic band, so that, when worn by the horse day and night, all the air respired by the nostrils must pass through the disinfecting cotton. Horses were only to be allowed water drawn from a non-infected locality—that obtained from a "sakie" (well?) near which there were infected stables or where horses were buried, being dangerous. Isolation of healthy from diseased horses was also to be carried out so long as the epizoöty lasted; and strangers, particularly grooms and servants, were not to be allowed into healthy stables, the *employés* in which were to wash their hands frequently in a solution of carbolic acid. Stables were to be kept clean, watered three times a day with a solution of carbolic acid and chloride of lime, and sulphur burned therein. Infected stables ought to be freshly plastered and whitewashed, as well as fumigated with sulphurous acid for forty-eight hours. These preventive measures were carried out in a stable in the centre of the plague-stricken locality, distant only 150 to 300 feet from infected stables; and up to the time of the issue of the report its equine inhabitants had escaped.

From this report it would appear that various contradictory opinions were entertained in Egypt as to the nature of the affection—some speaking of it as an Anthracoid Typhus, others as a diphtheritic malady, others as a kind of Croup, etc. But Bull and Fenger in their researches do not corroborate and of these opinions, nor is there anything whatever in their description to show that the mortality is due to entozoa, as indeed the history of the disease plainly disproves. They found neither diphtheritic nor croupous patches; neither did they discover the spleen to be enlarged—testifying, they assert that it was not Typhus; and that it was not an anthracoid malady they endeavour to demonstrate by the fact that the lymphatic glands were not affected in any way, neither were there bacteridia in the blood.

They only saw in it an infectious malady, a poisoning of the blood, the effects of which were localised in the respiratory organs as a Catarrh of the pharynx, larynx, trachea, bronchia, with multiple lobular pneumonia, and apoplexy in the lungs. The infectious character of the disorder was marked by dissolution of the blood, which produced ecchymoses everywhere in the respiratory organs, as well as in the pericardium, colon and mesentery, with parenchymatous alterations in the liver, heart, spleen, kidneys, and mucous membrane of the intestines.

In a horse which was attacked in the morning and succumbed in the evening, the autopsy, made two hours after death, revealed Catarrh, with disseminated ecchymoses on the tongue, in the pharynx, trachea, and bronchia, and on the surface of the lungs several ecchymoses varying in size from a nut to that of an egg; only in some of the smaller ones were there greyish-white patches in the middle. In passing the fingers over the surface of the lungs, several parts were found to be prominent and hard, and on cutting into these, they were observed to be of a deep-red colour at the periphery, and reddish-grey in the centre. In the texture of the lungs there were dark-

red "apoplexies" of similar sizes, and in compressing the lung-tissue containing air between these, mucus escaped from the smallest bronchia (Capillary Bronchitis). The posterior portions of the lungs were so infiltrated with blood that the tissue was destitute of air, dark-red in colour, and dense,—though, at the same time, it did not offer much resistance. There was also hypostatic engorgement.

All the cases met with offered the same characteristic alterations; but the authors allude to a typical case, the lesions of which they carefully give in detail. This was a large, strong European horse in excellent condition, aged twelve years, and which was quite well on the evening of September 23, when it had a long walk. At mid-day on the 24th it was all at once seized, and the earliest objective symptoms noticed were: loss of appetite, weakness, congestion of the conjunctivæ, elevated temperature (42° Cent. in the rectum), respiration short and jerking, gums injected and swollen, tongue dry and white. There were administered by the mouth and subcutaneously 5 grammes of sulphate of quinine and 1½ gramme of carbolic acid in solution. An hour afterwards the temperature descended to 40°, and in the evening it was 39°. At this period the animal was very feeble and restless, and 1½ gramme of carbolic acid was administered subcutaneously. Immediately after this an abundant perspiration broke out over it, and it appeared to be roused from its state of prostration. During the whole of the night the temperature remained at 39°; in the morning there was great debility, no appetite, and jerking respiration; the quinine and the injection of carbolic acid were repeated. In the evening the temperature had ascended to 40°; the next day it was 40½°, and the horse commenced to cough frequently and strongly; this cough was followed by oppression—the respiration becoming so difficult, and the horse making such frantic efforts to breathe, that a veterinary assistant performed tracheotomy. This operation, however, did not afford relief; and a bottle of wine was given to sustain the animal. A little later it became so tranquil that it stood in the stall without being tied; then it began to be restless again, wandered about the stable, ran against obstacles, endeavoured to avoid them, and finally expired, after a few convulsions, on the third day of the attack.

The autopsy, made seven hours after death, revealed Angina, catarrhal Pharyngitis, Laryngitis, and Tracheitis, capillary Bronchitis, acute multiple lobular Pneumonia, multiple apoplexies in the lungs, parenchymatous degeneration of the heart, liver, kidneys, muscles, abdominal mucous membranes, and salivary glands.

Those of our army colleagues who had any experience of the extremely fatal disease which attacked the horses of the expeditionary force soon after they were landed in Abyssinia, will be able to tell us if there was any analogy between it and this pernicious infectious fever of Egypt, which is said to have been brought from that country.

We may note that it has been reported from Ceuta, Morocco, that the plague (whatever that may mean) has broken out among cattle at Negron, and that precautions have been adopted at Gibraltar to prevent its introduction there.

EDINBURGH VETERINARY COLLEGE.

THE Edinburgh Veterinary College has sustained a serious loss by the appointment of Dr. McKendrick, its lecturer on physiology, to the Chair of Physiology in the University of Glasgow. This appointment, while it benefits and honours the University and is a most flattering proof of the high estima-

tion in which the country holds the abilities of Dr. McKendrick, nevertheless deprives the old veterinary school in the Scottish capital of a most distinguished teacher, whose interest in comparative physiology is very great, and we trust will soon be proved to be so by the publication of his promised work on animal physiology. We learn that the vacancy has been filled by the appointment of Dr. D. J. Cunningham, Demonstrator of Anatomy in the University of Edinburgh, who will, we have no doubt, maintain the credit of this important chair.

Proceedings of Veterinary Colleges, Veterinary Medical Societies, etc.

GLASGOW VETERINARY COLLEGE.

THE winter session of the Glasgow Veterinary College was opened on October 24, by Principal M'Call, who delivered an introductory address to the students, of whom there was a large attendance. Sheriff Clark occupied the chair.

Principal M'CALL, before proceeding with his lecture, said he wished to express the deep gratification which he experienced at seeing so many familiar faces present—betokening on the part of the students not only an abiding interest in the profession, but an interest in the progress and prosperity of the Institution as one of the means for elevating their obscure, but humane and honourable calling. It has been alleged that in many localities the fact of a Veterinary College having an existence in Glasgow was unknown. He had no doubt of that, but he was still of opinion that the best means of making their College known was to trust to their graduates; and with their labours in this direction they were entirely satisfied, and were content to abide the issue. Professor M'Call then proceeded to speak (1) of the past and present curriculum of studies in the Veterinary Colleges of Great Britain, and (2) the past and present results of the operation of the Contagious Diseases (Animals) Act, more especially in Glasgow. With regard to the first-mentioned subject, he said that about fifty-nine years ago, in 1817, as any member of the profession particularly interested in the subject might learn by a reference to the memoir of the late Professor Dick, the period of study at the London Veterinary College, prior to obtaining a diploma, was three months; and the late Professor Dick got his diploma within that period. In 1819 Professor Dick opened a class for instruction in veterinary science, which he conducted, as all knew, with signal success; and it was only a just tribute to his memory to state that without doubt he was entitled to the honour of being considered the founder and the father of veterinary science in Scotland. During the whole of Professor Dick's career, till his death in 1866, the period of study never exceeded two winter sessions of five months, and during that time the students had not to undergo any preliminary examination. The natural result of this system was to recruit the profession from hard-working but, in the majority of instances, imperfectly-educated youth. Nay, more,—it tended to banish from the College young men of a more liberal education, unless in cases where their love of the profession was so strongly expressed that they were allowed to proceed with their curriculum. It was said by some people that the career of the veterinary practitioner was best fulfilled and exemplified in the person of a groom or blacksmith; and that to educate a veterinarian would be to render him useless in regard to the practical work

of his profession. To reason thus was fallacious, and was reducing the veterinarian to the level of an artizan. None of them held the profession of so poor esteem that they thought any one could acquire a knowledge of it worthy of the name within so short a period of study. But subsequent to Professor Dick's death a preliminary examination of intending students was instituted in all the Colleges, and had since been continued with the best results. In the year 1870 another reform was inaugurated—viz., the putting of students to a practical test of their skill in diagnosing disease in animals, pointing out the seat of lameness, etc. Prior to this the examinations were entirely oral, and as a consequence many of the students became so wrapped up in theory that it was impossible to get them to bestow the necessary time and attention to practical details. This want of practical knowledge had done much to injure the reputation of the whole profession, and to shake the confidence of the public in the opinions of veterinarians and their methods of treating diseases. In 1873 another attempt was made to extend the term of study; but it was only successful to the extent of adding a summer session of two months, and also adding histology and botany to the list of subjects taught. In regard to the length of the curriculum, it should not be less than three winter and two summer sessions. The last of the reforms have been effected within the last two months, and applied to those students who had joined the College this session. At the First Examination the student would now be examined in materia medica, pharmacy, and in writing of prescriptions, chemistry, toxicology, and botany; at the Second Examination, in the anatomy of the horse and other domesticated animals, physiology and histology; and at the Third and Final Examination, in morbid anatomy and pathology, diseases of the horse, practical examination of horses and other animals as to soundness, age, disease, etc. If the pupils and students continued to display as much earnestness in the prosecution of their studies under the new as under the old curriculum, the day was not far distant when veterinary surgeons would occupy a position in society little, if at all, inferior to that of the medical profession. The Professor next referred to *the past and present results of the operations of the Contagious Diseases (Animals) Act, more especially in Glasgow*, and proceeded to say:—In the working of this Act, as is generally well known in the profession, this College has taken an active interest; and not only so, but for the last sixteen years we have regularly noted and commented on the ravages made by contagious diseases in our flocks and herds, and the urgent necessity there was for Government surveillance years prior to their institution. Until the ever memorable year of the Cattle Plague (1865), statistics were not available for demonstrating the losses resulting to stock proprietors from contagious diseases. But those members of the profession now present, who had engaged in business prior to the year referred to, will bear me out when I assert that a very large percentage of cattle fell victims to contagious diseases, and in particular to Pleuro-pneumonia or Lung disease. Having been requested by the local authority of Glasgow to inspect the dairies and cattle-sheds within the city bounds, with a view to their being licensed under the Cattle Sheds in Burghs Act, and to furnish statistics of losses sustained by the dairymen during the prevalence of Cattle Plague, I at the same time availed myself of the opportunity for collecting statistics regarding losses sustained from Pleuro-pneumonia; and in order to make these of practical use, in suggesting measures with a view to limiting the ravages to the disease, and also in demonstrating how formidable an enemy we had to deal with, I carried my inquiries as far back as the year 1853, and with what results shall immediately transpire. In the meantime, allow me to state and during the prevalence of Cattle Plague in the city byres 416 cows died and were buried; 347 were slaughtered in the initiatory stage, and realised

£2050 18s. 4d.; but, notwithstanding, the money loss to the dairymen could not be estimated at less than £9000. Now let us turn our attention to Pleuro-pneumonia. During the twelve years prior to 1866, according to a tabulated statement published by me, in the dairies of this city alone 3759 cows died from Pleuro-pneumonia, and were buried or removed to the "knackers'" yard; 1594 cows were slaughtered on account of having contracted the disease, and sold for £5929—still the actual money loss could not be computed at less than £54,677, which represents an annual loss to the dairymen of £4556 8s. 4d. from this disease alone. From the year 1866 till August, 1869, at which latter date the Contagious Diseases (Animals) Act became law, no statistics of disease, sufficiently reliable to be founded on, can be adduced; but from that time until the present I can give day and date for every animal which has died within the burgh of Glasgow, or been slaughtered on account of the disease we are now considering. For three years after the passing of the Act—viz., from August 1869 to August 1872—258 cows were attacked—139 were killed, 28 died, and 91 recovered from the disease of Pleuro-pneumonia. Now, according to a computation on the same principles as form the basis of my first tabulated statement regarding Pleuro-pneumonia, the value of cattle killed during the three years referred to was at the rate of £650 per annum. In other words, for twelve years prior to the passing of the Act the dairymen of Glasgow lost £4556 yearly by Pleuro-pneumonia; but since the Act came into operation their losses from the same disease had been reduced to £650. In 1873 the Privy Council issued an Order making it compulsory on the local authorities of England and Scotland to slaughter without delay all cattle within their jurisdictions affected with Pleuro-pneumonia, and to grant compensation—which prior to this never had been the case—to their proprietors, at the rate of *one-half* the actual value of the animal. Accordingly, in the month of August, 1873, I received instructions from the local authority of this city to carry out the provisions of the Order, and which I have continued to do until the present time. And now let us glance at the results. In the year 1873-4, 203 cows became affected and were slaughtered, and the total amount of compensation awarded amounted to £1011 10s. 8d. In the year 1874-5, 70 cows were slaughtered, and compensation granted to the amount of £502 16s. 9d. In the year 1875-6, 73 cows were slaughtered, and compensation granted to the amount of £676 12s. 6d. From the statistics thus adduced, I consider we are warranted in drawing the following inference: viz., *That the mortality and actual money loss from Pleuro-pneumonia* (with or without compensation being awarded) *has*, under the system of inspection of the local authority of this city, *been reduced to 1/4th that which it was prior to the passing of the Contagious Diseases (Animals) Act in* 1869. And now let us contrast these results with the operation of the Act in a few other places. In the Blue Book or Annual Report of the Veterinary Department of the Privy Council for the past year, the amount of compensation granted by the following local authorities is stated as follows:—

	£	s.	d.		£	s.	d.
Norfolk . .	2445	4	0	Suffolk . . .	754	6	10
Stafford . .	1984	18	6	Edinburgh . .	1113	17	4
Essex . . .	1440	18	0	Leith . . .	1000	0	0
Lancaster . .	1195	16	3	Glasgow . .	607	11	3
Northampton .	1092	3	3	Rutherglen . .	152	16	3
Derby . . .	794	15	0	&c.,	&c.		

Principal M'Call then proceeded to state that he apprehended that these figures, if properly analysed, bulked largely in favour of Glasgow. In the

Blue Book referred to, Edinburgh is returned as having slaughtered during the past year 361 cows, Leith 125, and Glasgow 60. Therefore, in the same given time, Edinburgh slaughtered six times as many head of cattle as Glasgow, and Leith rather more than twice as many. Then, again, as to the compensation allowed—Edinburgh has granted £1113 17s. 4d. for 361 cows; Leith £1060 for 125; and Glasgow £607 11s. 3d. for 60. According to these figures, then, Edinburgh has paid compensation at the rate of £3 2s. per head; Leith £8; and Glasgow £10. The local authority of Glasgow grant compensation *in terms of the Act—viz., One-half the value of the animal*, and over and above this, *one-half the money received from the sale of the carcase of the animal, if fit for human food*; the remaining half being retained by the local authority to assist in defraying the expenses of working the Act. If from £607 the sum of £162 (the amount of carcase money received), be deducted, then it follows that the local authority have only handed £445 to the dairymen—or, in other words, awarded compensation at the rate of £7 8s. 4d. per head. The price of Ayrshire dairy cows for the past two years, in open market, has ranged from £15 to £25, according to age and weight; and therefore he (the Principal) did not think that the dairymen of the city had received more than justice at his hands in valuing their cows at £14 16s. 8d. per head, and allowing them the half of that sum; and the additional carcase money, in his opinion, had been fraught with the best results, as it not only lightened the burden of loss to the dairymen, but was a strong inducement to reporting the presence of disease in their stock, and having the animals early removed for slaughter. Had the local authority of Edinburgh granted compensation for the 361 cows which they caused to be slaughtered at the Glasgow rate of compensation—viz., £7 8s. 4d.—then the compensation awarded to the dairymen of that city would have amounted to £2677 9s. 4d., or more than double the sum actually paid. Might the small amount of compensation awarded by the local authority of Edinburgh not be one of the indirect causes of the continuance and spread of the disease in and around Edinburgh,—as he observed that the local authority of that county were also returned as having slaughtered 191 cows, and awarded compensation to the amount of £1012 10s. 8½d. ? He then stated that he would not have so pointedly alluded to Edinburgh, but he had good grounds for stating that on two occasions, at least, within the past twelve months, two separate outbreaks of Pleuro-pneumonia in the dairies of Glasgow were traceable to Leith or Edinburgh, or the railway trucks in which the cattle were conveyed from there to Glasgow. In conclusion, the Principal referred to the loss sustained by the death of Dr. Moffat, lecturer on Materia Medica in the College, and intimated that, on the recommendation of Professor Ebenezer Watson, of the Andersonian University, Dr. Skirving had been appointed Dr. Moffat's successor.

The CHAIRMAN said he felt very highly honoured and pleased at being asked to take the chair at their meeting. He had known Principal M'Call for a considerable number of years, and he was always happy when he had the opportunity of being present at any of his lectures. But, apart from that, he was pleased to attend, because, although they might think that veterinary science had not much to do with the dry details of the legal profession, yet he confessed that he had always had a very great desire to become acquainted with that science; and it had only been because he had had to labour, he was afraid he must say, in less pleasant fields, that he had not oftener turned aside to derive some instruction from the lectures delivered in their College. He had been, as he was sure all had been, very much pleased and instructed by the interesting lecture; and if it was a specimen of what they would hear during their curriculum, he thought he was justified in saying that that insti-

tution was one of the most useful and most necessary in the community. Not only was veterinary science necessary for the interests of animal life, which was the origin of the science; but now-a-days it had received enormous importance from considerations to which in past times little attention was paid. At one period it seemed to have been thought that a human being stood entirely aloof from other races having organic life, and that comparatively little light could be thrown either backwards or forwards on one class of beings or the other. But he need not say that during the period of the present century now past, that idea had been almost entirely broken down. People were becoming more and more convinced that all animate nature was one; and no man could hope to make progress in the study of man, and the functions and uses of the various organs of the body, without studying comparative anatomy and other kindred sciences. Therefore, veterinary science must in the future hold a higher position than it had done in the past—for, rightly considered, if all animate nature be one kingdom, no one could say medical science was completed unless medical science included veterinary science and veterinary science included medical science. He cordially concurred in all that had been said by Professor M'Call as to the reforms which had been inaugurated and carried through in the College. The Principal had spoken of it as somewhat curious that in the days of Professor Dick a three months' curriculum was thought sufficient to qualify a man to become a veterinary surgeon. But he (the Chairman) was afraid that there were other professions in the early days of Professor Dick to which the same remark is applicable. Formerly, people used to take up the profession of a lawyer without any previous experience at all; and he was sorry to say there were some professions even yet, which were generally called learned, in which the preparations made for entering them were not sufficient. But people were getting wiser as the world got older, and it was coming to be seen that mere art, however clever the artificer might be, would never do without scientific knowledge. Some people said that a classical or scholastic learning was not of much importance in preparing for the veterinary profession; but, so far as his opinion went, that was decidedly an erroneous opinion. With reference to the extension of the curriculum, he thought it was impossible that the profession could attain to the position he should like to see it attain unless the curriculum were extended. The changes made seemed altogether to be of a most salutary character.

A vote of thanks to Sheriff Clark for presiding closed the proceedings.

EDINBURGH VETERINARY COLLEGE.

THE winter session of the Edinburgh Veterinary College, under the management of the Dick Trust, was opened on October 25th, with an address from Principal Walley. Bailie Howden presided; and there were present several other members of the Dick Trust; as also Professor M'Kendrick; Dr. Donaldson, High School; Captain Tod, of Howden; and Major-General Anderson. A number of ladies graced the proceedings; and there was a good attendance of students.

Bailie HOWDEN, in introducing the business of the day, remarked that it was gratifying to the trustees that two of their professors, Dr. Dewar and Dr. M'Kendrick, should have been promoted to important chairs in Cambridge and Glasgow respectively. While they deeply regretted the removal of the latter gentleman, they must remember that he had attained to higher honours; and notwithstanding the senseless and vulgar insinuations that had emanated from certain quarters, he was confident that Dr. M'Kendrick would add another to the many illustrious names that had adorned the ancient seat of learning to which he was promoted.

Principal WALLEY, after touching upon the recent changes in the teaching staff of the College, and referring to Dr. M'Kendrick as one who had endeared himself to all with whom he came in contact, and in whom Glasgow University had made a great acquisition, proceeded to speak of the extension which has from time to time taken place in the veterinary curriculum. For some years, he said, in the early history of the profession, a curriculum of three months, and afterwards of five months, was all that was demanded. As time went on the profession had slowly risen, even with the aid once given by Parliament cut off. While other professions less worthy in their ultimate aims had been subsidized by State grants, theirs had been left alone; and at a time when it was of the last importance to the well-being of the country, not only had the profession been neglected, but those who had laboured long and earnestly for the good of their fellow-subjects had been allowed to slip away without reward or even recognition. In this connection reference was made to Mr. John Wilkinson, and the improvement effected by him in the condition of our army horses; after which Mr. Walley, recurring to the curriculum, remarked that for many years two short sessions of five months each were considered sufficient to make a member of the Royal College of Veterinary Surgeons. The utter absurdity of this curriculum was seen by all; and three years ago a short summer session was added, and a little relief given by the division of the examination into two parts. This was the insertion of the thin end of the wedge, and now they had added another winter and another summer session. This advance they owed in great measure to the energetic and self-sacrificing character of their President, who had also striven successfully to improve the profession by obtaining a Charter for the institution of a higher degree in veterinary medicine. One thing yet remained to be accomplished—the protection of those who had spent the best part of their lives in obtaining scientific knowledge from the inroads of the quack and the arrogant empiric. Passing to the subject of cruelty to animals, the Principal said he did not wish to have it for a moment supposed that he was an advocate for vivisection in the extreme way in which some had advocated it. Nor had he any more sympathy with the extreme anti-vivisector than with the extreme vivisector. As a veterinary surgeon, wishing to see his profession advanced, he should feel himself inconsistent if he leaned to one side or the other. Veterinary surgeons had ever been on the side of humanity, as witnessed by the fact that a veterinary surgeon (the late Professor Spooner) was one of the deputation which some years ago proceeded to France to plead for the suppression of vivisection before the late Emperor, and another veterinary surgeon (Mr. G. Fleming) carried off the first prize offered by the R.P.C.A. for the best essay on vivisection. He went on to canvass certain portions of the evidence given before the Royal Commissioners—remarking, in reference to one point, that he could not agree with the statement that chloroform could not be administered to the dog, and affirming that if dogs had died under chloroform it had been through the neglect of proper precautions. The horse, he added, as well as the ox, might be kept under the influence of chloroform for many hours with impunity, and he should like to see it used more than it was in operations on those animals; though even here it was to be remarked that the pain of many operations was nothing to the misery and discomfort, as proved by his after demeanour, which chloroform produced in the horse. Referring to the legislation which has taken place on this subject, he remarked that on the whole, with one exception, it seemed moderate and wise. Had the voice of the extreme anti-vivisection party been allowed to have its way, all physiological, pathological, and therapeutic progress would have been brought to a standstill, with incalculable injury to men and animals. There was no form of disease

in existence for which there was not an antidote; and it was owing to our imperfect and undeveloped methods of investigation that such antidotes had not been found. After showing how he had himself been enabled by experiments on one or two useless horses to determine the effects of aconite, with a view to future practice, Mr. Walley went on to say he was not satisfied with the provision of the Act which prohibited experimentation on animals, even under chloroform, for the purpose of obtaining manual skill. This, he thought, was an immense mistake, and showed a want of practical acquaintance with proved facts. For several years it had been his practice to administer chloroform to horses, and not only operate upon them himself, but make the students do so under his guidance, under exactly the same conditions as those under which they would have to operate in private practice. The consequence of this practical training had been that those students who took advantage of the opportunities afforded them were as capable of performing all the more common operations as he was himself. But under the new law the only chance the students could have of obtaining a knowledge of veterinary practice would be by operations on the dead subject, where they would be operating under conditions exactly the opposite of those not carried out under the guidance of a teacher. In the living subject the organs to be operated upon were often deluged with blood, and quivering under the knife, and perfect quiescence could not be obtained; whereas in the other case the tissues were blanched and quiescent, and the operator had not before his eyes the fear of severing important structures. If students were not taught at college how to perform operations, and made to perform them themselves, where, he asked, were they to gain practical experiences? He answered, By experimenting on their patients; and it was not to be wondered at if, rather than become the laughing-stock of onlookers when called on to operate, students should be led to experiment in secret. Touching next on the general question of cruelty to animals, the Principal pointed out the anomaly implied in punishing a poor man who, having himself to work under a sore or with a lame leg, might think there was no great harm in his horse being made to do the same, while widespread cruelties were allowed to be perpetrated in the name of sport, or for a variety of other purposes. In conclusion, he tendered to the students some practical advice as to the spirit in which they should prosecute their college course and look forward to their future profession.

After a few remarks from Bailie CRANSTON, who had now taken the chair, Dr. M'KENDRICK addressed some farewell words to the trustees and the students. His connection with the Veterinary College he spoke of as having been of great advantage in having enabled Dr. Dewar and himself to pursue scientific investigations which they could not have carried out in almost any other place in Edinburgh. He impressed upon the students the view of their future profession in which it was regarded as a means of relieving suffering and conferring important practical benefits on the country; and submitted that the distinction between the physician who dealt with human ailments and the veterinary surgeon who treated those of animals was an artificial one, which would disappear as our thoughts regarding such things gradually developed.

A few observations were afterwards offered by Captain TOD, and the proceedings closed with a vote of thanks to the Chairman.

EDINBURGH NEW VETERINARY COLLEGE.

THE session of the New Veterinary College, Gayfield Square, was opened on October 25th by an introductory lecture from Principal Williams. Mr. H. J.

Cartwright, V.S., Wolverhampton, occupied the chair; and among those present were Rev. A. M'Lennan, Dr. Dycer, Dr. Smith, Dr. Stevenson Macadam, Dr. Young, Professor Johnstone, Captain Bolton, R.A.; Messrs. F. Walker, V.S., 7th Hussars; J. Gibbs, V.S.; R. A. Balfour, V.S., Kirkcaldy; Aitken, V.S., Edinburgh; Paterson, V.S., Dumfries; R. Gatley, V.S., Pathhead; Faulkner, V.S., Dundee; Spruel, V.S., Dundee; Barns, V.S., Whitechurch; Boyd, V.S., Melrose; Storrie, V.S., East Linton; Johnston, V.S., Roslyn; Brown, V.S., West Calder; and Scott, Hopetoun House.

The CHAIRMAN said he had great pleasure in presiding on the present occasion. He had been present at the first opening of the Institution, and he was glad to say that the impression he then formed as to its future had been in all cases fully realized. He had no doubt that if the same energy that had been displayed in the past were exhibited in the future, the career of the College would be a brilliant one. So satisfied had he been with Principal Williams's teaching and that of his staff that he had sent his own son here. He intimated letters of apology for unavoidable absence from Sir James Gardiner Baird, Colonel Gillon of Wallhouse, Captain Tod of Howden, and Mr. Fleming, V.S.

Principal WILLIAMS said it was with feelings of great pleasure that he again met his friends and students at the opening of another session. The feeling was enhanced by the presence of many of those who had supported him at the opening of the Institution three years ago, and also by the important fact that those who were his colleagues then were his colleagues still, and that they worked in harmony with each other and with the students. There had not been a single word of discord in the College since its opening. He then proceeded to notice the death of Mr. Wilkinson, the Principal Veterinary Surgeon to Her Majesty's forces, and of Mr. Melville, Professor of Botany in the College. The removal of Mr. Wilkinson, to whose professional attainments a tribute was paid, had enabled a change to be made in the tenure of the office of Principal Veterinary surgeon in the Army. In future that office was only to be held for seven years, and therefore there was a greater chance of promotion in the army than before. Important changes had occurred in the last six months in matters relating to veterinary colleges and practitioners. In response to a frequently expressed desire of those interested in the profession, the curriculum of study had been extended from three to five sessions, and the examinations which students had to pass had been increased from two to three. Every one of the teaching colleges had supported these alterations; but he would like to ask whether the increase of knowledge thus obtained, and the extra expense incurred by the students and colleges alike, would be appreciated and responded to by those employing veterinary surgeons. Experience taught them that the men who gave their knowledge cheapest—however inferior it might be—very often had the preference; but he had some degree of confidence that as the world advanced in education the better-taught men would make their way. In large towns veterinary surgeons had seldom cause to complain as to their remuneration—in some country districts they had every reason to be satisfied; but in many parts of Scotland, as well as England, their emoluments were very small. As to the public service, the advancement and pay of veterinary surgeons had been exceedingly slow. Indeed, so tardy were those at the Horse Guards that for the last few years the best students had declined, and still declined, to enter Her Majesty's service, whilst others had left it in disappointment. He was in a position to say that, unless something was done to increase the pay and give more rapid promotion, no candidates would be found. Whilst young men could obtain port-inspectorships with as good and in many cases better salaries than, and without incurring all the expenses incidental to, an army

veterinary surgeon, it was not to be wondered at that they preferred these appointments to the honour of wearing Her Majesty's uniform. Veterinary science obtained no assistance from the country in the way of endowment, and he trusted that the Government would see its way to make the public service more attractive to veterinary surgeons, and thus indirectly benefit the colleges. In conclusion, the Principal criticised in detail some of the new regulations of the Royal Veterinary College, and added : " In addition to the above reforms, our legislative Council has made our profession more select than even those of law or medicine ; for, if a student be rejected three times he is prohibited, and for ever, from ptesenting himself for examination, although such student might again begin at the very beginning. I have no sympathy with this exclusive measure, and have not feared to express the reasons of my objections before the Council of the Royal College of Veterinary Surgeons. I need not repeat them here."

A vote of thanks to Principal Williams was accorded on the motion of Rev. A. M'Lennan, who spoke of the Principal's Continental and American reputation ; and on the motion of Mr. Walker, thanks were given to Mr. Cartwright for presiding.

MONTREAL VETERINARY COLLEGE.

THIS valuable institution resumed its classes for the term on October 4th, the inaugural lecture being delivered by Dr. Osler, Professor of the Institute of Medicine in the McGill University ; the subject being " The Relations of Animals to Man." There was a numerous attendance of students and other parties interested—including Principal McEachran, Mr. W. J. M. Browning, President of the Council of Agriculture ; Dr. Howard, Mr. Swinburn, V.S., Mr. G. Swinburn, V.S., etc., etc.

Dr. OSLER, in an exceedingly interesting manner, with the aid of the skeletons of a fish, a reptile, a fowl, a goat, a horse, and a man, showed the similarity of their structure, and that one vertebra was homologous with another. Similarly, the upper limb of man and its bones were homologous with the lower limb, the arm with the thigh, the fore-arm with the leg, the wrist with the ankle, and the fingers with the toes. In the same way, when one compared the parts of different animals of the same type, it was seen that this law prevailed : the prehensile arm of man was homologous with the fore-limb of the quadruped used in walking, with the flipper of the seal, the wing of the bird, the paddle of the turtle, and the pectoral fin of the fish. All these parts, differing in form and use, were modifications of essentially the same portion of the vertebræ skeletons—viz., the anterior lateral appendage. In the class Mammalia, comprising those animals which suckled their young, the modifications which the extremities underwent were worthy of most careful study, and no department of anatomy was more interesting. The hand of man, the fore-leg of the horse, the wing of the bat, and the paddle of the whale, included the same bones, arranged after the same pattern, and placed in the same relative position. So far, then, as the skeleton was concerned, man was constructed after the same general model as the rest of the mammalia, and corresponded bone to bone with the monkey or the seal. Turning to the internal organs, a like correspondence was met with. The digestive, respiratory, and circulatory systems were essentially similar—minor modifications in form and structure occurring in particular classes. Even in the brain, the most complicated organ in the human body, there was nothing, beyond its high development, which did not find a counterpart in the brain of the orang. In the ultimate composition of the various organs of man's body, as revealed to us by chemistry and the microscope, the same elements, the same

arrangement of fibres and tissues occurred, as in other mammals. These resemblances, however, between man and the lower animals, striking as they might appear, were still more wonderfully demonstrated by the study of comparative embryology—the science of development. He continued: In modern times anatomists have been at special pains to trace, at different stages in the development of the individual, structural likenesses to the same tribe. Thus, as one of the most strenuous supporters of this view says: "Certain very early and low stages in the development of man, and other vertebrate animals in general, correspond completely in many points of structure with conditions which last for life in the lower fishes. The next phase which follows upon this presents us with a change of the fish-like being into a kind of amphibian animal. At a later period the mammal, with its special characteristics, develops out of the amphibian; and we can clearly see in the successive stages of its later development a series of steps of progressive transformation which evidently correspond with differences of different mammalian orders and families." Though, perhaps, not so striking as here laid down, nevertheless there is a remarkable parallelism between the embryological development of one of the higher mammals, and the gradual succession of animals of the vertebræ series. A similar parallel may be also drawn between stages of development of a higher vertebrate, and the order of succession of animals in geological time: first fishes; next amphibians; then the lower, and last the higher, mammalians. Enough has, I think, been said to show the close relationship, as far as anatomical structure and development goes, between man and animals. You will not be long students before you find out that similarity in animal structure is accompanied by a community of disease, and that the "ills which flesh is heir to" are not wholly monopolized by the "lords of creation." It is almost superfluous to give examples; but I might mention one disease of animals, the transmission of which to man has been of incalculable benefit—viz., Cow-pox, or Vaccina. Small-pox and Cow-pox are closely allied affections; and the discovery by Jenner that the latter, if inoculated into man, gave him for a period immunity from the former, ranks as one of the greatest discoveries—one, unfortunately, too little appreciated in this city. We have seen that the whole series of animals, from fishes to mammals, conform in their general plan of organization to one type—the vertebrate.

The Dóctor then continued to discuss in a very able manner the origin of species—setting before his auditors the different theories upon the subject; and concluded by specially addressing the students upon what would be their duty as students and professional men.

CENTRAL VETERINARY MEDICAL SOCIETY.

THE first ordinary meeting of the above Society was held on Thursday, November 2nd, at 10, Red Lion Square, W.C., at seven p.m.—Mr. William Field, jun., the President, occupying the chair.

The PRESIDENT drew attention to a prospectus about to be issued to the public by the Farriers' Company, offering prizes to the profession and farriers for certain subjects calculated to advance veterinary surgery and promote a better system of horse-shoeing. He also exhibited a morbid specimen, and furnished the following history thereof:—The animal was a gelding, aged about eighteen years, and on August 30th last it showed symptoms of abdominal pain, convalescence being delayed some time. On October 28th it became ill again, but more severely—the pain abating and returning. When it was brought to him the pulse was 45, and strong; the mucous membranes normal; less pain when recumbent; no fæces were passed; and a strange

position was assumed—that of stretching out, and turning the head and tail to the same side, until there was only a short space between them. The symptoms remained much the same for three days, with the exception of the pulse, which rose to 85. At the end of this period he was destroyed, at the owner's wish. Throughout the illness the urine was passed easily and frequently. On opening the animal he expected to find a calculus; but, much to his surprise, the jejunum was discovered to be diseased. The stomach contained a small portion of well-digested food. Being an unusual situation for disease, he was induced to submit the case to the meeting. The intestine shown exhibited great atrophy in some parts and thickening in others, and was closely examined by the Fellows—it being finally handed over to Mr. Steel to examine and report upon.

It was surmised by some present that it was the result of an intussusception that had been returned.

Mr. BENTLEY mentioned having seen a similar appearance in a dog, caused by swallowing a stone; as well as several instances in cart-horses.

Mr. GOWING, sen., then proceeded to explain his method of using Read's "Probang," which he said had been undeservedly condemned by many practitioners as useless or dangerous. It had a large wide extremity fitted with the corkscrew, the other end having a screw adjustment for a stomach-pump if necessary. The difficulty consisted in fixing the screw to the impacted substance—which was either turnip, wurzel, potato, or an egg—and in lacerating the œsophagus in futile efforts to withdraw it; the ground of complaint being the stilette, which others asserted was liable to swerve and perforate the œsophagus, but in theory it looked more dangerous than in practice. Supposing a case, he instructs an assistant to first secure the head to the beam of the byre, and holding the horn with one hand and end of the gag, he gives an oleaginous draught, which is at once returned; then the instrument being well greased, the tongue is held with the left hand, which grasps it more firmly if covered with a cloth. He directs an assistant to feel the impaction, and press it securely, with the hand behind it, while he pushes the tube towards it, and slightly screwing it, draws at the stilette. Should the assistant feel it move from his grasp, he knows it is under control, and then screws it up more—when the withdrawal is easy. Should the substance refuse to yield at first, it still has the advantage of assisting to break it up, when it can be passed downwards into the rumen instead of being extracted. In high or low choke, tympany is often present; then the use of the trocar hfirst is called for. He prefers a small lancet incision first, instead of plunging it quickly in.

Mr. BENTLEY preferred a smaller bulb, believing that this was too large; but he admitted that a large one was less likely to hurt the œsophagus. In one instance he found an egg that had been impacted in a horse's chest for forty-eight hours; by manipulation he was enabled to press it upwards to the gullet, when, passing an ordinary singing-tube, he broke it.

Mr. CLARK always insisted on exercise in horse-choking, and had had no fatal results. He believed choking was due to feeding with dry corn in the early morning, before watering.

Mr. WOODGER, jun., then related his experience in inducing death under chloroform, in an aged pony. Some years before the animal had a fit, and the poll was blistered to effect a cure; but lately it was in good health, though of no use. The feet were tied together, and one nostril plugged with tow saturated with chloroform, the hand being placed on the other nostril. In two minutes it staggered and fell, and lay breathing for twenty minutes, when respiration ceased; but for fully five minutes afterwards the heart beat at 140 per minute. The animal consumed about four ounces in all—wasting

some. There were no particular morbid appearances. He now used it for cats and dogs.

Mr. ROALFE COX said deaths from chloroform during operations in human surgery were now extremely rare. Some years ago, wishing to destroy an animal under its influence, it was cast and dosed almost continuously for three or four hours, the agent being given largely diluted with air; the heart beat, but the animal was only unconscious, and was finally killed by injecting the jugular vein. At the present time he submits every case requiring operation to the influence of chloroform, and decidedly advocates it; at first he employed a complicated apparatus, but now finds a simple piece of calico passed under the roof of the mouth and tied over the nose—being supported by attachment to the blinkers—all that is necessary. About ℥iss are used, and the animal is under its influence in about seven minutes. During the first one or two minutes there are struggles; and in order to ascertain whether the creature is well under it, he draws the tongue till it lies inert—as moving the blind to examine the eye tends to rouse it. To restore it he drops water in the mouth and moves the bandage.

The PRESIDENT stated that he had killed some ten or eleven horses in this manner; the last required about six ounces, and occupied about three-quarters of an hour.

The meeting then adjourned, as the evening was well advanced. Present, thirteen Fellows and one visitor.

At the next meeting, Mr. Fleming will exhibit some pathological specimens, and some appliances for enabling horses to travel on ice. He will also read a paper "On some Ancient Horse-shoes found near Oxford, and on Roman Hippo-sandals."

JAMES ROWE, JUN., *Hon. Sec.*

MONTREAL VETERINARY MEDICAL ASSOCIATION.

THE opening meeting of this Society was held on October 12, at the Veterinary College, Union Avenue—Professor D. McEachran in the chair. In reviewing the past session, the President alluded to the great advantages which the profession had derived from the meetings and discussions. Fifteen meetings had been held, and a corresponding number of papers and communications of cases had been read and discussed. Letters of congratulation and encouragement had been received from the leading men of the profession in Great Britain and the United States. Professors Williams and Walley, of Edinburgh, and George Fleming, F.R.G.S., editor of the *Veterinary Journal*, and author of several of our text-books, had been elected honorary members. Altogether, the Association had made greater progress than its most sanguine promoters could have expected; and this large meeting, including all the members of the profession in the City, and all the students of the Veterinary College, evidenced that the session now opened would be equally satisfactory. Several members and students of the medical profession had indicated a desire to join the Association; and the President hoped the rules would be amended so that they could be admitted. He also hoped that those who were to read papers during the present session would prepare them, so that they could be filed or published, as might be considered advisable. The following officers were then elected: President, Professor D. McEachran; first Vice-President, F. W. McLellan; second Vice-President, C. J. Alloway; Librarian, Charles C. Lyford; Secretary and Treasurer, Malcom C. Baker: and a Committee consisting of the President, F. W. McLellan, C. J. Alloway, and George Sermon, was appointed to revise the rules. At the next meeting, to

be held on Thursday, the 26th October, a paper was to be read by the President on "The Selection and Purchase of Horses for special purposes," to be followed by a communication by Mr. Lyford, on "Shoulder-slip in the Horse."

ROYAL AGRICULTURAL SOCIETY.

AT the monthly Council Meeting, held on November 1,

Dr. BURDON-SANDERSON, F.R.S., reported upon the progress which had been made in reference to the experiments and pathological investigations into Pleuro-pneumonia which are being carried out at the Brown Institution, and stated that a grant of £50 had been made at the last meeting of the British Medical Association, at Sheffield, for a microscopical investigation of the diseased organs in Pleuro-pneumonia, which had been undertaken by Dr. Roy. Whatever results were obtained by him would be of value to confirm or complete those of Dr. Yeo, whose labours in the same direction were being carried on simultaneously.

A letter was read from the Secretary of the Yorkshire Agricultural Society, stating that a grant of £100 had been made out of the funds of that Society in aid of the investigations into the nature and treatment of Pleuro-pneumonia and Foot-and-mouth disease now being carried out by Dr. Burdon-Sanderson for the Royal Agricultural Society of England. On the motion of Col. Kingscote, C.B., M.P., seconded by Mr. Richard Stratton, the Secretary was instructed to express the thanks of the Council for this testimony by the Yorkshire Agricultural Society to the public advantage which will doubtless result from these scientific investigations of the diseases mentioned.

Army Veterinary Department.

Gazette, October 27.

15TH HUSSARS.—Veterinary-Surg. Charles Whitney Gillard, from the Veterinary Department, to be Veterinary-Surg., vice William Walker, transferred to the Veterinary Department.

ROYAL ARTILLERY.—Veterinary-Surg. James Webb resigns his commission; Veterinary-Surg. Charles Clayton, from the Veterinary Department, to be Veterinary Surg., vice S. L. Pallin, transferred to the 8th Hussars.

VETERINARY DEPARTMENT.—Veterinary-Surg. of the First Class William Varley, from Veterinary-Surg. Royal Engineers, to be Staff Veterinary-Surg., vice J. Collins, promoted Principal Veterinary-Surg.

Veterinary-Surg. William Walker, from the 15th Hussars, to be Veterinary-Surg., vice C. W. Gillard, transferred to the 15th Hussars.

Gazette, November 10.

VETERINARY DEPARTMENT.—Veterinary-Surg. C. Percivall, 11th Hussars, to be Veterinary-Surg., First Class.

YEOMANRY CAVALRY, Ayrshire.—J. Dickie, gent., to be Veterinary-Surg., vice W. Aitken, deceased.

Veterinary-Surg. F. F. Crawford, Royal Artillery, is reported to have passed the lower standard examination in Hindustanee, on September 4.

Veterinary-Surg. W. B. Spooner, R.A., has been directed to proceed to Bombay for Remount Duty.

Inspecting Veterinary-Surg. A. Turnbull, Indian Army, has been permitted to retire from the service.

The following amusing extract is from the Indian *Homeward Mail*, of November 6. Surely the pettiness of "Red Tape-ism" could descend no lower than in prescribing for a pennyworth of firewood upon which to diet a horse, and at such an expenditure of foolscap and postage, and sad waste of brain-tissue to the careful and intelligent prescribers! We may well ask what malady the animal was suffering from which necessitated this ligneous treatment? Perhaps the veterinary surgeon of the Battery may know something of the case, and we must appeal to him to enlighten our Western darkness. Above all, we should like to know if the horse managed to survive until the order had returned from the Governor in Council through the multifarous channels it had already traversed, down to the timber merchant who complied with the requisition to furnish the specified quantity of "chips." We have often heard of "wooden-headed" men and "wooden-legged" horses, but we must confess it has been reserved for Horse No. 106 to demonstrate the existence of a "wooden appetite." We once heard a circus clown recommend that a wonderful performing horse in the arena should be rubbed down with a brick, and have a feed of "chips," as the reward of its obedience. Of course we thought the recompense was a joke; but we are now inclined to believe that the "chip" diet is something more than a joke in Madras, as we cannot believe that the Government of that Presidency could view it in other than a serious light.

"STRANGE DIET.—Our sympathies are extended to Horse No. 106 of the E Battery, 20th Brigade, Royal Artillery, at present under medical treatment at Ootacamund. The small chance of life that exists for a man when he falls into the hands of half a dozen doctors must surely be hopefulness itself in contrast to the chances of a horse prescribed for under 'general orders by His Grace the Governor in Council.' The case of Horse No. 106 of the battery named is, we fear, particularly hopeless. We are not acquainted with the precise nature of his malady, but he would seem to be something of a martyr doomed to end his days in agony, if not at the stake. We are led to this conclusion as our eye rests upon the following order on page 25 of the *Fort St. George Gazette* of Oct. 10, 1876:—

"'No. 609 of 1876.—The following order by the officer commanding Nagpore force is confirmed:—

"'No. 166, dated Sept. 14, 1876.—Directing 5 lb. of firewood to be added to the change of diet ordered for horse No. 106 of the E Batty., 20th Brig., Royal Art., in Division Order, No. 154,* dated Aug. 25, 1876.'

"Giving a literal interpretation to the order—which no doubt has an occult meaning in the eyes of the officer commanding the Nagpore force, and in the eyes of the Madras Government—we speculate on the digestive powers of the invalided trooper, and wonder with what intent this stern prescription of firewood was passed and confirmed. We turn with interest to the order indicated by the asterisk—Madras G.O.G. No. 561—but get little satisfaction. There we find the following:—

"'MILITARY DEPARTMENT.

"'GENERAL ORDERS BY HIS GRACE THE GOVERNOR IN COUNCIL.

"'*Ootacamund, September* 13, 1876.

"'No. 561 of 1876.—The following order by the officer commanding Nagpore force is confirmed:—

"'No. 154, dated Aug. 25, 1876.—Directing the issue, on medical grounds, of an additional diet of 2 lb. of cooltee and 4 lb. of dry grass per diem, for sixty days, for horse No. 106 of the E batty., 20th Brig., Royal Art.'

* Madras G.O.G. No. 561, dated Sept. 13, 1876.

"There is nothing here to remove the belief that the Royal Humane Society, or the Vivisection Committee, or some institution for the protection of dumb animals, should step in to protect Horse No. 106 from the dose of 5 lb. of firewood which is to be administered daily, under the orders of the Madras Government, with the allowance of 2 lb. of cooltee and 4 lb. of dry grass, for a period of sixty days. Apart from the exact nature of the prescription, it does, perhaps, become a question whether the columns of the *Fort St. George Gazette*, and the time of His Grace the Duke of Buckingham and Chandos, the Governor of Madras, in Council, might not be better employed than in promulgating dietary orders for individual horses of the Military Department."

Jurisprudence.

FOOT-AND-MOUTH DISEASE CONVICTION QUASHED.

At the Northumberland Quarter Sessions, at Morpeth, on Saturday week, before M. W. Ridley, Esq., M.P. (chairman), Col. J. P. O. Mitford, John Cookson, Esq., the Hon. Athol Liddell, and Watson Askew, Esq., an appeal case was decided, in which a cattle dealer named Dolan was the appellant, and the Hexham magistrates (Messrs. Cuthbert, Allgood, Waddilove, J. M. Ridley, Straker, L. W. Atkinson, were the respondents. It appeared that on the 2nd of May, Dolan was charged at Hexham, under section 57 of the Contagious Diseases (Animals) Act, with exposing four heifers affected with Foot-and-mouth disease at Stamfordham fair, on the 20th of April last. The defendant asked for an adjournment, on the ground that his witnesses were not present—some being at London to give evidence before the Privy Council; but the case was proceeded with—and, without hearing the defence, Dolan was ordered to pay the full penalty of £5 per animal, or in all £20 and costs, —the bench considering the case fully proved. On Saturday, George Stephenson, cattle inspector, Hexham; Wm. Anderson, Hexham; P.C. John Jobson, P.C. Telfer, John Ward, veterinary surgeon, Hexham; W. and H. Huntly, veterinary surgeons, Gateshead; and Professor Fordie, of Glasgow, gave evidence for the respondent's case, affirming that four of the cattle had marks of blebs on the upper and lower jaws, inside their mouths—the blebs appearing to have burst. There were other symptoms of the disease. Thirty cattle the defendant had at the fair, including the four, were taken to a field, and kept there some time. For the appellant, after Dolan, John Sweeney, cattle dealer, Thomas Robson, Joseph Robson, John Pye, C. Charlton, and J. Gallon, had spoken to the healthy condition of the stock, which they had bought from Dolan before the day in question, but of the same consignment,—and Alexander Gillespie and John Corbet, veterinary surgeons, Newcastle, and Robt. Bulman, veterinary surgeon, Ponteland, had also given evidence, Mr. Henry Wilkinson, veterinary surgeon, Newcastle, was called, and said he was employed in various parts of the country, on behalf of the Privy Council, to investigate disease. On the 26th of April he went to see Mr. Dolan's cattle—thirty of them. None of them were suffering from Foot-and-mouth disease, nor any recovering from it, that he could detect. There were a great many of them lame, arising from foot-soreness. There were no vesicles on the coronets, nor separation of the hoofs. He examined the mouths of several of them—a dozen of the most prominent. He found marks of cuts from the teeth. He had not the least doubt of this. Some of the animals were suffering from cold, and some were coughing, with a little running at the eyes. These were indications of colds. In the most prominent cases shown

him there were not the slightest symptoms of Foot-and-mouth disease. He did not see one animal that was lame all round—*i.e.*, in all four feet. Mr. Clement Stephenson, Newcastle, had examined the cattle of his own accord at the field, and expressed his opinion that it was cold the animals suffered from, and not one distinct symptom of disease was shown. Professor Williams of Edinburgh corroborated the evidence of Mr. Wilkinson. From the careful examination he made of the animals, he was of opinion it was not Foot-and-mouth disease. The marks in the mouth were caused by teeth, and they were suffering from cold. If the animals had been contaminated on the 20th of April, they *must* have spread the disease before the 25th. This closed the case.

Obituary.

MR. ANDREW BOWIE, of Hawick, Roxburghshire, died on October 17th. He was among the senior members of the profession in Scotland, having graduated in 1827, during the early years of Professor Dick's School. A local newspaper, in noticing the mournful event, remarks: "Another well-known and old resident in our town has passed away; another familiar face has been shrouded. Andrew Bowie was perhaps the oldest veterinary surgeon in the south of Scotland, and his skill was not mean. Old age had been creeping in upon him; nevertheless, although his muscles had failed, his brain was, nearly to the end, as clear as ever. In certain departments of veterinary science his knowledge was minute and accurate, and his experience was long. It was no wonder, then, that up to the last he should have retained the confidence and held the practice of many of the stock-holders in the district. With his fellow-practitioners in the locality he was always on the best terms; and his death will be a source of regret not only to them, but to the community at large."

With deep sorrow we have to record the death of Mr. W. Varley, M.R.C.V.S., who was recently promoted from the Royal Engineers to be Staff Veterinary Surgeon. This melancholy event took place on the 20th November, at Aldershot, and was due to Pneumonia. Mr. Varley graduated in 1853, and joining the Army in 1854, served in the Crimea, India, and Canada.

The death is announced of Mr. Charles Holt, M.R.C.V.S., Darlington, in the fortieth year of his age. He graduated April 29, 1870. Mr. Lawrence Dobbyn, M.R.C.V.S., of Waterford, is reported as having died some years ago.

The Veterinary School of Toulouse has just sustained a great loss in the person of one of its most distinguished and talented teachers, Professor Gourdon, who died suddenly on September 23rd, at the early age of fifty-two years. Gourdon was highly esteemed in France as a teacher, an orator, a man of science, an indefatigable student of comparative anatomy and pathology, and a writer on veterinary subjects. His excellent "Elements de Chirurgie Vétérinaire," in two volumes, has long been out of print, and a new edition has been anxiously looked for by numerous inquirers. During several years he had been engaged in the preparation of a treatise on the foot of the domesticated animals, and we have reason to believe that the work is now in the press. We sincerely regret that he was not spared to witness the success which is certain to attend the publication of this long-expected treatise; and we still more regret the loss which befalls veterinary science, by his premature removal from the ranks of its earnest students and successful investigators.

Notes and News.

AUSTRALIAN EXPLORATION AND CAMELS.—Mr. Giles, in his account of his trans-Australian journey, speaking of the great Australian desert, says: "At starting into the desert most of the camels were continually poisoned, the plant which poisoned them not being allied in any way to the poison plants of the settled districts of Western Australia. I now know it well, and have brought specimens. The longest stretch without water was a ten days' march. One old cow-camel died after reaching the water. . . . The camels have travelled splendidly."

AN EPIZOÖTY IN AMERICA.—A strange and fatal disease has broken out among the cattle in Wayne County, Pennsylvania. The cattle are, it is said, invested by a singular tick, which bores deep into the flesh of the creature. Inflammation sets in, and death follows in a few hours.

THE NEW FRENCH ARMY.—By the new organization of the French army, we find that there are 419 veterinary surgeons attached to the staff and different regiments, besides a variable number of provisional assistant veterinary surgeons, and 208 veterinary surgeons of the reserve. A cavalry regiment consists of four field and one depôt squadron; each squadron consists of 141 horses in time of peace, including a second horse for each of the captains; and there are one corporal farrier and two farriers. Each regiment has one first-class veterinary surgeon, one second-class ditto, and one assistant veterinary surgeon. In the artillery, each regiment has two veterinary surgeons and one assistant veterinary surgeon,—the regiment consisting of four field and two depôt field batteries, the strength of a field battery being 60, and a horse artillery battery 86 horses.

VETERINARY SURGEONS IN THE RUSSIAN ARMY.—The Russian army has, it appears, only 173 veterinary surgeons.

CATTLE PLAGUE IN MONGOLIA.—The Kiakhta corrrespondent of the Irkutsk newspaper *Siberia*, writes under date August 22 that the Cattle Plague in Urga and in the Gobi Steppe becomes more and more intense, and begins to attack also the sheep, horses, and camels. The Mongols paying no heed to it—purchasing, and even eating sick sheep—the plague threatens to propagate itself throughout the whole Steppe, especially when the Mongols, who have been assembled in enormous numbers at Urga for religious ceremonies, return to their homes. The Camel Plague, if extended, must cause great difficulties in the tea trade, there being no means for the transport of tea during the winter except by camels. The beasts being already in a wretched state, because the grasses were nearly burnt during the last exceptionally dry summer, and the Plague breaking out, it is feared that the tea caravans will be totally stopped at Tunjou and Kalgan.

THE SMALLEST HORSE IN THE WORLD.—The Punjaub may boast of containing the smallest horse in the world, if the following, as published in the Lahore paper, be true:—"His Highness the Nawab of Loharoo sent a remarkably diminutive Nepauli pony, which is only eight inches high, as a present to the young Maharajah of Puttiala. The pony is a perfect miniature of a well-bred horse, and is highly valued by the natives."

STOCK IN GREAT BRITAIN.—From the agricultural returns of Great Britain for 1876, just issued, it seems that the number of horses, cattle, sheep, and pigs in England, Scotland, and Wales, as returned by occupiers of land on the 25th of June last, was as follows:—Horses used solely for purposes of agriculture, 968,587; unbroken horses of any age, and mares kept solely for the purpose of breeding, 405,989: making a total of 1,374,576 horses (including

ponies), against 1,340,129 returned in the year 1875. Of cattle there were at the same date 2,227,867 cows and heifers in milk or in calf; other cattle two years of age and above, 1,567,641; under two years of age, 2,052,294: making a total of 5,847,802 cattle for 1876, against 6,012,824 in 1875. Of sheep there were 18,248,352 one year old and above; 9,924,599 under one year old: in all 28,172,951, against 29,167,438 in the previous year. The number of pigs returned is 2,293,620 in 1876, against 2,229,918 in 1875. The returns of horses, cattle, sheep, and pigs for the Isle of Man, Channel Islands (Jersey and Guernsey, etc.), for 1876, give the following results: Isle of Man—horses, total number for 1876, 5258; cattle, 19,206; sheep, 70,566; pigs, 6142; Channel Islands: Jersey—horses, 2212; cattle, 11,302; sheep 488; pigs, 5936; Guernsey, etc.—horses, 1862; cattle, 6686; sheep, 1056; pigs, 4588. It is, however, stated in a note that the figures for 1876 may be subject to future revision, the final corrections in some cases not having yet been received.

PREVENTION AND CURE OF FOOT-ROT IN SHEEP. (By R. Bennet, in the *Journal of National Society of Victoria, Australia*).—"I never found any cure to equal the arsenic trough," writes Mr. Bennet. "Get all your sheep in; pare the hoofs of the lame ones, taking care to cut away only the diseased portions, and avoid, if possible, drawing blood; then run the whole lot through the trough, sound ones included. The arsenic hardens the hoof, and not only effectually destroys the germs of disease, but acts as an antiseptic. Fine, dry weather is essentially necessary for this operation, and the strength of the bath should be three ounces of arsenic to the gallon of water, the depth of the solution in the trough should not exceed three or four inches, just deep enough to cover the hoof. If sheep are run througg the arsenic about once every two months, a lame sheep will be the exception, and not the rule, as is too frequently the case on many stations and farms of the present time."

Correspondence, etc.

TUBERCULOSIS.

To the Editor of the VETERINARY JOURNAL.

SIR,—I have this day forwarded to you a specimen of what I removed from the abdominal walls of a cow. I was asked this morning to see a cow, the property of Mr. Chaplin, of Ridgwell, Essex, a noted shorthorn breeder. The cow was slaughtered yesterday. I found the walls of the abdomen and thorax, the external parts of the rumen, and the covering of the lungs and heart, completely covered with formations similar to the specimen. I did not have the opportunity of seeing the cow alive, but am informed that she had been wasting for two months. I was also informed by the knackerman who bought her mother, that she was in a similar state, but not nearly so bad as this one. I should be pleased to hear your opinion of the case, and I also thought it might be interesting to some of your readers. I have met with a great many cases, but never saw one to equal this.

I remain, sir, yours very truly,

CHARLES MARKING, V.S.

[From the morbid specimen sent, the case was undoubtedly one of Tuberculosis—a disease which, from its comparative frequency and importance, every veterinary surgeon should be well acquainted with. It is hereditary, and, we fear, contagious. The use of the flesh and milk of such animals as food should be carefully watched.—ED. *V. J.*]

RANDOM JOTTINGS ON CURRENT TOPICS.

To the Editor of the VETERINARY JOURNAL.

SIR,—The action of the Council at their last meeting has somewhat anticipated my remarks in your last number regarding the election of first Fellows. The Charter, however, warrants such a conclusion; but I am glad to find they have recognised, in some degree, the self-stultifying position they would have been in, had they proceeded to create and proclaim each other Fellows. I find I am in error in saying "they can claim the diploma in virtue of their being Councillors and possessing the servitude qualification;" but, after all, it is the Council who have to make the final selection from those names submitted to them by the committee of their own appointing. The basis and stipulations for their action is still sufficiently narrow; and it would, I think, have been much better had it come from some independent source—a committee of the whole of the members; or to submit every one who wished for the degree, to an examination.

On looking over the 1016 members who have the fifteen years' qualification, I am afraid there are not more than twenty-five who could cross the *pons asinorum:* not, certainly, a very high standard to found a University upon; while there are others who have not the fifteen years' qualification—yourself among the number, that all the known propositions of Euclid would be but a mere mental recreation to prove, and who have a few continental and classic languages at your finger-ends as well, who will have to submit to the ordeal of an examination. Well, I suppose the line had to be drawn somewhere; but a system which allows of such an anomaly is certainly not the best that could have been adopted.

Although they have anticipated my remarks on this question, I have anticipated their action on the penal clause, as it has ended in nothing but a motion for delay. One is almost inclined to think that some of the Councillors must have been in "Sleepy Hollow" with Rip Van Winkle for the last few years: so little do they seem to know of the wants or sympathise with the wishes and aspirations of the great body of the profession. It would not, I think, be uncourteous or inopportune just to hint to some of these phlegmatic philosophers who sit around the Council Board, and are always ready with the wet blankets of expense and expediency to extinguish the flame of progress, that if they cannot move on, they should move out of the way and not try to hinder it.

It would be interesting to learn from Mr. Harpley how he happens to know beforehand that Parliament would not grant such protection as we ask for.

Surely if the British Government so "strongly respects the rights and privileges of Englishmen," as our President asserts it does, it could not refuse to grant protection to the title of a chartered body, numbering some three thousand members, and prevent its being assumed by any one and every one who chooses; and who do not comply with the rules and regulations laid down by their own instrument. It would show most clearly their disrespect for existing rights and privileges if they refuse to do so. They have already done so for the medical profession; they have recognised the right of the horse to be protected from being drugged by his driver; they extend their protection to the wild birds and sparrows. Surely "we are of more value than many sparrows."

It would be well to hear from Professor Williams why he considers the matter premature. Does he mean us to infer that the Highland Society has petitioned the Duke of Richmond for a penal clause, and that we need not move in the matter until he has made up his mind?

Are we not having it perpetually dinned into our ears that no penal clause can be got by charter? Why, then, need we wait for his decision?

The time is come for action. Let the matter be brought to the vote of the profession, as suggested by Professor Walley; and if they do not want it, "let it rest in peace."

Those who wish it, and feel aggrieved by the present state of things, will not, I presume, grudge to put their hands into their pockets and assist in the pecuniary part.

In advocating this question, I may say that I disclaim all personal motives; indeed, personally, I have little to complain of. I do not care two straws for a score or two of quacks more or less. I find more quackery inside than outside the profession, and it is more difficult to contend with. I take my stand on the broad principles of right and justice.

The Charter confers on a certain number of men, called the Council, powers to make and suspend byelaws, to fix the times and places of its own meetings, and the time, places, and manner of examining students, and the fees payable for such examinations; and when such students are found qualified by the Board appointed under this Charter, they are to be declared members of the College, and enjoy the status of professional gentlemen, and to be known under the name and title of "Veterinary Surgeons"; and, further, that without this status none are entitled to practise as such in any part of Her Majesty's dominions. Here, then, we find certain rights, privileges, and advantages are guaranteed by the Charter. Does not common sense (to say nothing of legal enactment) tell us that these benefits were meant to be a reality, and that, without some penal clause, or means of enforcement, they could be no better than a sham? and are we to be told, after such proof to the contrary, that the Council can do nothing to help us, or themselves, in upholding these rights and privileges! But so it is; and the best—indeed, the only advice they tender us—is to "advertise the unregistered practitioners in the local journals," and if we require to ask them to certify as to who is, or is not, on the register, we have got to pay for it. Away with such pettifogging ideas! They are unworthy of the Council of the Royal College of Veterinary Surgeons of Great Britain and Ireland.

Is it right or just to compel men to study at a college for five sessions, subject them to three searching examinations, and then pretend to grant a right to the title of Veterinary Surgeon, or M.R.C.V.S., which they admit they have no power to defend, and which any one may, and a good many do, assume with impunity?

Is it right or just that the Council should receive the fees it demands for its title, and upon the implied condition that its graduates are to have the full benefit of the chartered rights of which they are the possessors, distributors, conservators, and protectors?

Is it right or just to deceive the public with such an institution as the Royal College of Veterinary Surgeons, trying to gain a "local habitation and a name," and increasing its educational status by such means, and that it should take no steps to put a stop to the dishonourable usurpation of its titles by those who have not the slightest claim to them?

If the Council can answer these in the negative, then I must say it looks very like receiving money under false pretences. It seems to me as clear as noonday—because it is consistent with right, justice, and common sense—that the Council has the power of protecting our rights and interests in this matter, and that they are in duty and honour bound to take steps for suppressing the infringement of these rights.

Truly, we are degenerating from the manly independence of our forefathers. Although no penal clause is embodied in the old Charter, it is most certainly

implied ; or all these benefits conferred, or meant to be conferred, are nothing better than delusions and a sham.

The Council, however, strong in their belief of the omnipotence of education, and their educational scheme, quietly ignore all right to protect us from the competition of uncertified skill. A most tremendous advance must be made, however, in scientific and practical knowledge before any assistance need be expected from that power—such an advance as, I am afraid, no one at present living will be privileged to behold ; and I would beg to ask respectfully, Is it right and just to be always legislating only for the future? It is much more gratifying to think that long before this educational millennium arrives, the members who have suffered so long and so patiently will rise up in a body and demand that this matter be attended to in another way and by other means.

The universal spread of education, the advance of science, and the extension of the period of study for the diploma of the College, will be more likely to increase than diminish illegal practice.

In the first place, the expense of the extended curriculum must deter many young men of limited means but good abilities—the class, indeed, from which the ranks of the profession is principally recruited—from entering the profession unless in an illegal way. Secondly, only students of good means will be able to take out their degree and commence practice ; and these are not the men who have hitherto made the best practitioners, or otherwise upheld the dignity of the profession. And, thirdly, a great many of good means and social position will be deterred from entering it by the long curriculum, and will prefer the medical profession, where the social position is better and the practice not so onerous. So that the Educational Scheme newly brought into effect will—without a penal clause—open a double avenue to the uncertified practitioner.

Nor is quackery the same kind of thing it was a few years ago, when it was principally confined to the cowleech and the blacksmith. It is actually progressing ; and I am not sure but that the quacks are better customers to our authors and editors than plenty of men having M.R.C.V.S. attached to their names. It is great in beaver and broadcloth, sealskin, silk, and golden trinkets. It even advertises for qualified assistants ; and, unfortunately, some of our needy brethren have to accept its terms and become its teachers. It is to be found in the mart, the market, and on the exchange. Its proportions are gigantic, and its pretensions are intolerable. It even aspires to fill the position of Inspectors ; and the chief constable of a division, who is often appointed to that post, generally finds in quacks ready tools to suit his purpose and favour his pretensions : often victimising the public and deceiving the Veterinary Department of the Privy Council—the head of which is in the same category.

Here is a case in point. In a neighbouring district to that in which I reside, the chief constable is the appointed Inspector under the Contagious Diseases (Animals) Act. A farmer in his jurisdiction had a bullock which had been ill for a few weeks, with what his veterinary attendant (a quack) called "ulcerated sore throat." It could scarcely swallow, made a noise in its breathing, and fell off very much in condition. The farmer, wearied by the unsuccessful treatment, thought he would like the Inspector to see it. This man soon came to the conclusion that it was "the disease" (Pleuropneumonia), and that it must be destroyed and buried. In order, however, to fulfil the requirements of the Act, he had to obtain a professional man to examine it ; and this he found in the shape of another quack, who very soon substantiated the opinion of the chief constable, and shot the bullock without any further ceremony—telling the farmer it had been allowed to live too long,

that he ran great risk of losing all his stock, and volunteered to treat them. It was buried with all due formalities; but the first quack who had it under treatment, enraged at being baulked of his case, disinterred it, and brought part of both lungs for my inspection. And, sure enough, he was right, for the lungs were perfectly healthy.

Here is another case of how the quacks can do it. A medical gentleman of this town was in want of a horse, and commissioned a local horse-dealer to find him one. Not having one of his own, he (the dealer) went to a quarterly horse sale in Peterborough, where he soon found one which he thought would suit the doctor. He came to terms with the owner, and the understanding was that it must be examined by a veterinary surgeon. This expert was soon found by the vendor in the person of his own farrier—a notorious quack, and who had the unblushing effrontery to examine and certify as to the animal's soundness, and to subscribe himself a Veterinary Surgeon! I happened to be at the sale, but arrived too late; and the dealer showed me the horse and the certificate. I did not like either, and told him so; and to substantiate my statement, I procured a Register, and showed the dealer that there was no such name in it. He went to the quack and demanded his money back; but no—the quacks don't do business in that way; and he had to take his horse home to the doctor with this certificate. The animal proved a "screw," and the doctor sold him as a sound animal to some one else on the strength of this certificate.

And these are by no means uncommon cases, nor am I alone in my experience of them.

Now, sir, if any of our Councillors can say that even classical education and practical abilities combined would put an end to, or even in some measure check, such proceedings, it will only show that they take a transcendental and most favourable view of human nature. No, sir; I make bold to say that, although you make a thousand "Fellows," and the new members are as wise as Solon, as moral as Socrates, and as practical as Councillor Greaves would wish them to be, and advertise in every journal in the United Kingdom, you will not put an end to, or even much modify, the present feeling of the public regarding quackery, or lessen the number of quacks.

Could any of them, in the plenitude of their generosity, believe that by advertising the names of such men in local journals, as not being on the Register, they would have the slightest effect in putting a stop to such practices? It would only let the public know better where some clandestine thing could be procured.

If it is to be done by this means at all, it must be done by some official authority outside the district.

And who have we to look to but the men who accept our money, and confer a certain status and title upon us in return?

These are the men we have to stir up to a sense of their duty and obligations towards the profession, by showing them that our grievances are real, and that the remedy they propose is futile and impracticable.

Let me then, my brother practitioners, entreat you—if you wish well to your profession, desire to live by it as you should, and see it stand well with the public—to be up and doing, and leave no stone unturned in trying to secure that restitution of our rights and privileges which the old Charter was intended to confer, and which the ignorance or remissness of previous Councillors have deprived us of. We need expect nothing on the old lines from the present Council. The time is opportune for action to try to procure an Act which shall place us in our proper position before the public. We ask no monopoly. What we ask is the suppression of quackery and empiricism,

the improvement of our knowledge, and exemption from burdens which are harassing to ourselves and hazardous to the community for which we labour. I refer to the discharge of parochial duties, as well as our liability to serve on juries, both of which are often a source of loss and annoyance to many—indeed, mostly all of the members of the profession. In this matter, however, the Council has fought well—but, unfortunately, not with complete success. Let us strengthen their hands for future efforts, when they tend to afford us protection of the right kind—"protection which adds to the prosperity of the individual, and is promotive of the general good."

If they will persistently refuse to move in earnest in the matter of a penal clause, or an Act to enforce the one undoubtedly implied in the old Charter, then, in conclusion, let me address you in the language of one of England's greatest poets, when he makes his arch-fiend say :—

> "And, reassembling our afflicted powers,
> Consult how we may henceforth most offend
> Our enemy ; our own loss how repair ;
> How overcome this dire calamity ;
> What reinforcement we may gain from hope,
> If not, what resolution from despair."

Yours fraternally,
JOHN GERRARD.

Market Deeping, 10*th November*, 1876.

P.S.—Since the above was written, I have been threatened with an action at law by the employer of one of these pseudo-veterinary surgeons, for rejecting a horse as unsound, which you will see from his letter (which I enclose) the quack considered sound, as also other two veterinary surgeons, probably having his own qualifications—that is, none at all. Further, I may state, for the information of your readers, that this same self-styled veterinary surgeon is living with either his third or fourth wife, the previous ones being alive. He was divorced from the first one, left the second and third, and now lives with the fourth, for whom he served a term of imprisonment under the law of bigamy ; he has also served a further term of penal servitude for forgery—indeed, I believe he is at present at large on a *ticket-of-leave*. Surely this should convince some of your sceptical members of Council that we have a real grievance, and that nothing but the long and strong arm of the law can render us any assistance in disconnecting ourselves from such company.

J. G.

EXAMINATION FOR SOUNDNESS FEES.

To the Editor of the VETERINARY JOURNAL.

DEAR SIR,—I observe in the November number of the *Veterinary Journal* that the subject of fees for examination of horses as to soundness—a very important matter with town practitioners—is prominently brought before the profession by you in all its bearings. I quite concur with your remarks, and think the present fee of ten shillings and sixpence quite inadequate compensation for the time, skill, and labour required for a proper examination. It is certainly the worst remunerated and most responsible part of veterinary practice ; besides, it requires that the practitioner should be a man of great experience, in the prime of life, and in the possession of all his faculties. I feel quite sure the matter has been too little considered by most veterinary surgeons, and am of opinion that the guinea can be obtained as readily as the

half-guinea, when a careful examination is made and a conscientious opinion given.

I can speak from experience, having charged the increased fee since the 24th of last June. This advance was first intimated to my clients on a fly slip of paper attached to the half-yearly accounts, to the effect that the fee for examination of horses as to soundness would be for the future £1 1s.; and I find it has met with a very favourable reception.

Should you think these remarks worth your notice, please insert them in the *Veterinary Journal*, and oblige,

Yours very truly,

MARK TAILBY, M.R.C.V.S.

Lower Priory, Birmingham, *Nov.* 14, 1876.

ANSWERS TO CORRESPONDENTS.

INDEX.—There is only one Royal College of Veterinary Surgeons in the world. The letters M.R.C.V.S., L. and E., can therefore have no meaning. The person affixing them to his name is not a member of the Royal College.

STUDENT.—We know of no better book in the English language than Williams' "Principles and Practice of Veterinary Surgery."

Communications from Professor Walley, Principal Veterinary Surgeon Decroix, and Messrs. Rolls, Poyser, Cox, Gerrard, T. D. Broad, Lyman, Reynolds, Broughton, Olver, "A Veterinary Student," and J. McKenny, are unavoidably pressed out of this month's journal, and will appear in our next. The title-page and index for this volume are printed, but for the same reason cannot be issued until next month.

Communications, Letters, Books, etc., Received.

COMMUNICATIONS have been received from J. Howard, Woolwich; T. J. Poulton, Messing Kelvedon; R. Poyser, The Carabineers; Professor J. Law, Cornell University, Ithaca, U.S.A.; E. Decroix, Principal Veterinary Surgeon, Lyons; Captain Russel, Grantham; Professor McCall, Glasgow; "A Veterinary Student"; W. A. Cox, Ardwick, Manchester; A. G. Rolls, Arundel; Col. Sir F. Fitzwygram, Bart.; Professor Williams, Edinburgh; J. Gerrard, Market Deeping; Professor Walley, Edinburgh; J. Rowe, Jun., London; T. D. Broad, Bath; F. Reeks, Shaftesbury; M. Tailby, Birmingham; J. McKenny, Dublin.

BOOKS: *J. Law, D.V.S.*, Hereditary Entailments in Domestic Animals and in the Human Family; *Bull and Fenger*, Un Mot sur l'Epizoötie Chevaline au Caire en 1876; *Ed. Dèle*, Les Maladies Contagieuses et Infectieuses dans le Royaume-Uni, etc.; *L. Franck*, Handbuch der Thierärztlichen Geburtshülfe.

JOURNALS: *Practitioner; Edinburgh Medical Journal; Archives Vétérinaires; Repertorium der Thierheilkunde; Recueil de Médecine Vétérinaire; Wochenschrift für Thierheilkunde und Viehzucht; London Medical Record.*

NEWSPAPERS: *Hawick Advertiser; Edinburgh Courant; Montreal Herald; Mark Lane Express; Newcastle Daily Journal; Nature; Lancet; Scotsman; Farmer; Agricultural Gazette; Manchester Weekly Times; British Medical Journal; New York Spirit of the Times; Boston Evening Gazette; Montreal Gazette; Medical Press; Live Stock Journal; Land and Water.*

All Communications, Books for Review, Advertisements, etc., must be addressed to the Publisher, 20, King William Street, Strand, W.C.

Morbid Specimens are to be forwarded addressed to the Editor, "Veterinary Journal," Brown Institution, Wandsworth Road, London.

Communications must be accompanied by the name of the writer, whether he may desire to have it published or not. Anonymous letters and articles cannot be inserted. The Editor does not hold himself identified with the views or opinions pressed by Contributors. Communications for insertion in the next number must arriv on or before the 15th of the present month.